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THE UNIVERSITY COUNCIL FOR EDUCATIONAL ADMINISTRATION PRESENTED THREE SEMINARS IN 1961 FOR PROFESSORS OF SCHOOL ADMINISTRATION. THE AIM WAS TO ENCOURAGE A MORE SYSTEMATIC USE OF CONCEPTS AND THEORIES IN RESEARCH ON SCHOOL ADMINISTRATION. THIS REPORT PRESENTED 22 PAPERS WHICH WERE PRODUCTS OF THE SEMINARS. THE PAPERS WERE GROUPED UNDER--(1) SOCIAL AND INSTITUTIONAL FACTORS AFFECTING RESEARCH, (2) CONCEPTS, THEORIES, AND MODELS IN RESEARCH, (3) METHODOLOGICAL CONSIDERATIONS, AND (4) RECRUITMENT AND DEVELOPMENT OF EDUCATIONAL ADMINISTRATORS. THE PAPERS REPRESENTED CRITICAL THINKING ABOUT SOME IMPORTANT QUESTIONS RELATED TO THE ATTAINMENT OF SUPERIOR BASIC RESEARCH ON SCHOOL ADMINISTRATION. (JM)

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RESEARCH IN EDUCATIONAL ADMINISTRATION

Cooperative Research Project No. F - 2

Edited by
Stephen P. Hencley

University Council for Educational Administration

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The many contributions of the host universities--the University of North Carolina, the University of Chicago, and the University of California (Berkeley)--are gratefully acknowledged. Each of these universities provided attractive conference facilities and extended numerous courtesies to the conference participants.

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The Cooperative Research Branch provided the financial support required to launch the seminars. Moreover, personnel from the Cooperative Research Branch made substantial contributions to each of the three seminars through the presentation of papers.

Finally, appreciation is expressed to Sharron Watt for her expert typing and assistance in the preparation of the entire report.

Jack A. Culbertson
Stephen P. Hencley

FOREWORD

Jack Culbertson

University Council for Educational Administration

In the fall of 1959, professors of school administration in UCEA universities were asked to indicate aspects of the research process which were of greatest interest to them. Although there was some variation in responses, a widespread desire to examine the relationships of concepts and theories to research activities was clearly evident. This interest suggests that professors of school administration wish to achieve stronger scientific underpinnings for school administration.

The three seminars,which were planned and presented by the University Council for Educational Administration in April, May, and August of 1961, were designed to reinforce and to heighten these aspirations of professors. The papers which follow are a product of these three seminars.

In focusing upon the two-way relationships of theory and research, the intent of the seminars was not to place a low value upon applied research and a high value upon basic research. In a field such as administration, invidious comparisons of this kind are inappropriate. Rather, the aim was to encourage more systematic use of concepts and theories in research on school administration.

Numerous questions need to be probed if theory development and research on school administration are to proceed fruitfully. Some of these questions relate to social and institutional factors and the papers in "Section I" seek to shed light upon some of these factors. Such forces as university leadership, sociological factors in universities, research policies and practices in colleges of education, definitions of research priorities, and research efforts and mechanisms at the national level are discussed in this section.

In "Section II" a number of authors focus directly upon selected aspects of concepts and models and their relationships to research design and theory building. A number of these papers present actual concepts and/or models and demonstrate their power and utility to produce research. Other papers focus upon such questions as the general relationship of concept development to research and some of the assumptions which underlie the use of models in research. In comparing selected aspects of two theories for studying administration, one of the papers raises some interesting questions by implication about the inter-translatability of theories.

The papers in "Section II" are designed to suggest something of the potential role of theory-oriented research in the development of knowledge about school administration. Insights about how persons can use models and concepts to develop research strategies are also offered. Finally, the various papers provide a basis for assessing not only the values but also the limitations of concepts and models in the study of school administration.

In "Section III" consideration is given to a number of methodological considerations in the study of school administration. One assumption underlying the papers is that experimental design is not the only approach to obtaining knowledge about administration. Thus, survey research, case research, and other kinds of investigation are given consideration.

Since proposals are an important bridge between the planning and implementation of research, one of the papers in "Section III" focuses upon the analysis of a sample of proposals which were recently submitted to the Cooperative Research Program of the U.S. Office of Education; the paper points up some important clues as to how research in school administration might be improved. Another paper focuses upon the desirable characteristics of proposals as a complement to the paper which analyzes actual characteristics.

If research on school administration is to be significantly advanced, more than a definition of factors that currently affect research productivity is needed. A fundamental problem in this regard is the future recruitment, training, and encouragement of researchers to study school administration. The intense competition for intellectual talent which is taking place among different organizations in our society adds both to the seriousness of the problem and to the need for appropriate plans to solve it. The requirement to think creatively on this matter is clear and compelling and a number of papers are presented in "Section IV" which will be of help in pointing new directions.

In summary, then, the papers which follow represent critical thinking about some important questions related to the attainment of superior basic research on school administration. Underlying all of these papers is the assumption that if more quality research is to be achieved, a better understanding about the two-way relationships of theory building and research activities is needed.

In some circles in our culture, it is fashionable to say that we must be practical and that to pursue theory is to pursue a dead end. Such reactions concerning theory have been prevalent at least from the time of the Greek astronomer, Thales of Miletus, who, when he fell into a well while viewing the stars was criticized for being so intent on knowing what was going on in the heavens that he could not see what was at his feet. In spite of such persistent criticisms, it is very clear that some of the greatest impacts on culture have come about through the development and testing of new concepts and theories by researchers and thinkers.

Mary Parker Follette once noted that the word "profession" connotes a motive of service, on the one hand, and a foundation of science, on the other. The motive of service in the emerging profession of school administration has been firmly established. The great challenge in the years ahead will be that of providing a more scientific base for this increasingly important human enterprise.

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SECTION I

Social and Institutional Factors Affecting Research

THE PROBLEM OF LEADERSHIP IN THE UNIVERSITY

ROSS L. MOONEY
OHIO STATE UNIVERSITY

INTRODUCTION

This paper is based on two previous papers, one written as a report to the faculty of the College of Education at The Ohio State University following three years in a new post as their Coordinator of Research,[1] and the other written as an analysis of related leadership problems in the university[2]. Both resulted from personal experience in a particular situation.

I was asked to form this case material in a more generalized way to help persons in other university situations form their own observations on the problem of leadership in universities.

This I have attempted to do by converting my leading observations into generalized propositions which may then stand as challenges to others to compose their own views. These propositions I have joined, one to another, by edited passages from the previous papers, showing their linkage and transition in my own thought. I do not present solutions; my interest centers on presenting the problem.

I begin with a section stating propositions relating to a split between research and teaching, a phenomenon which I observed more particularly in my work as Coordinator of Research. Recognizing this split to be one of several occurring with the growth and change of the university since 1900, I then present a section stating propositions relating to fundamental shifts inside the university since the beginning of the century. Focusing these shifts into consequent problems for leadership in the university, I then present a section of propositions relating to the leadership situation. In this way, I hope this paper may be serviceable to others.

It is not important that others agree with me, but it is important that we all realistically face the truly crucial problems which are involved. My own conclusion, from my own experience, is that persons in official status positions in the modern large university cannot fulfill institutional leadership functions, given the situation which currently prevails. Indeed, no one can give the university the leadership it sorely needs. My job, in this paper, is to challenge you to your own perspectives on this matter.

---

[1] Report of the Coordinator of Research as of June 1, 1950: College of Education, The Ohio State University, Columbus 10, Ohio; 18 pp. mimeographed.

[2] Research Development: The Problem of Leadership, Preliminary Draft, November 1, 1950. Bureau of Educational Research and Service, The Ohio State University, Columbus 10, Ohio; 27 pp. mimeographed.

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A. PROPOSITIONS RELATING TO THE SPLIT BETWEEN TEACHING AND RESEARCH

Proposition No. 1 - Present day research is a new development having its own special roots; powerful precedents have been set by the way in which research has been financed in the country since the war.

When contracting agencies of government or industry have given money for research, they have stipulated the categories within which the proposals may be offered and they have reserved to themselves the power to accept or reject each specific proposal. When Congress sets up money for research, it stipulates the categories in which money can be spent and it sets up its own specific agencies to pass on the specific proposals submitted. When the State Legislature gives money to the university for research, it, too, stipulates the categories in which the money is to be spent. Private foundations use the same pattern of thought. All along the line, the precedent has been set that those who have the money have the power to control the specific research which they purchase.

There is no place in the system of these recent precedents for using outside money to back the universities, as such, for what their professors shall name, out of their own wisdom and experience, as good research to be doing. The universities have been by-passed as agencies adequate in their own right to determine what research to do. The universities are seen by outside agencies as pools of people available for use as these agencies see fit.

Proposition No. 2 - Responding over a number of years to these precedents in financing research, we have accepted them as valid for determining how we should administer our own funds when we are free, within the university, to do as we wish.

To administer "free money for research," we set up central university committees which we give the power to approve specific proposals. Administration is not through the regular lines of the budget (i.e. president, deans, department chairmen, faculty members) but through these committees, authorized by the faculty to operate out of the office of the president.

Control by these committees is absolute. Though the university might have viewed these groups as responsible for the legislation of principles and policies, leaving the responsibility for judgment and administration of specifics to normal channels of authority, the university has not done so. It has given the committees total power, legislative, judicial and executive.

Faculty members who obtain help for their research, whether through local committees or through outside agencies, therefore, do so by special channels, separated from their normal departmental routes. Department heads and deans, though they see the papers passing through, tend to become spectators of a separate operation in which they have no crucial part.

Department heads tend to restrict their views of themselves to that of being supervisors of arrangements for teaching, letting research become what it will as individual faculty members are motivated and controlling committees decide. A coordinator of research, acting for a dean at the college level, becomes little more than a communicative agent, serving between the two poles of power, one held by the individual faculty member who has the power of initiative and the other held by the committees who have the power of specific approval. Neither department heads nor deans have real leadership potential in this matter, nor realistic capacity to take responsibility for the integral functioning of the university activity.

Proposition No. 3 - Two culture systems are developing, side by side, in the university, one for the normal lines of budgeting and responsibility, centering on teaching, and the other for the special agencies of power for research control, the deeper meaning of which is that the integrity of the university as intellectual and cultural leader for society is being split and surrendered, in part, to the values of those who can capture special money for their particular purposes.

Subtle evidences of the two cultures appear in a number of ways. The word "research" is becoming attached to the kind of inquiry a man can get special allocations of money to do. The tendency now is to conclude that a man is not doing research if he does not have special money to do it. The vitality of inquiry as an essential ingredient in the efforts of professors in all university disciplines is weakened as the spot light goes to those who have the special funds.

Research becomes a specialist's game, specialization in knowing the particular frame of mind of particular committees and specialization in knowing the kind of research methodology which is regarded as good by the particular committees. As money flows from these given sources, the research which is produced increases sharply in volume such that even more specialization is needed just to keep up to date in the rapidly moving field.

Though the committees are composed of men of status and integrity, the conditions under which they are asked to make their judgments are not favorable to the integrity of research in the varied disciplines in which they are required to act. In our university, the committees are representative of a wide variety of disciplines. When met with the necessity of passing judgment on proposals from a score or more of different disciplines, the individual members quickly sense their personal incapacity to make judgments in several disciplines within which they do not themselves have authority. Being men who want to be fair and just and who are sensitive to the criticism of colleagues whom they may have to turn down, they come under great pressure to find a consistently operative procedure which makes them as safe as they can hope to be. The line of safety is most evident in agreements among themselves that all projects shall follow what is currently called "good methodology," overlooking the fact that good methodology is inextricably embedded in the intellectual construction of each particular discipline.

Perspective on "good methodology" has its roots in the bulk of research experience in the university. Since the War, the bulk of this experience has come through contract research, emphasizing technology and the natural sciences. When the committees are faced with research proposals which are humanistically oriented or holistically oriented as much research in the social sciences, humanities and arts necessarily needs to be, they do not see the "good methodology" they are looking for in the safety zone; they feel inept, uncertain, and vote negatively. Certain areas in the university community therefore suffer while the areas which have had the most support from outside funds to date tend again to be the ones to receive favor in the eyes of the university committees.

In this way, the values of agencies outside the university have come to dominate also the values of the university itself. We are being led by outside money; we do not adequately maintain and assert our integrity as university men responsible directly to the generations for wise and balanced leadership of the minds and values of men. We have abrogated our responsibilities even when we have had the chance to accept them in the administration of our self-controlled funds.

Thus, we have come to a situation where the integrity of the university enterprise is being challenged in the value splits which modern pressures have introduced and which we, more unconsciously than consciously, have further supported by our own policies.

Proposition No. 4 - A number of factors have contributed to the growth of separate systems for the budgeting and control of research and teaching: inflation, competition from outside, public acclaim, increasing enrollments, research specialization, interdepartmental financing, precedent from gifts, limited "free funds for research," service in the cold war, costly research in the technologies, academic status of research, peer approval of promotions, recently heightened value of the good teacher.

1. In an inflationary economy, with lagging pay scales, faculty members need supplementary income; outside research money offers that opportunity.
2. Outside the university, new opportunities are being offered in industry and government for full time research without teaching; this offers both competition and a model for the complete separation of research and teaching.
3. Many faculty members who, heretofore, found themselves unheralded outside the cloisters of the university now find themselves wanted in the big world beyond; this is stimulating to many who, having been taught by the general culture in America that he who joins a university staff does so knowing he thereby sacrifices all right to the prospect of general public acclaim for the possible acclaim of his esoteric group, now sees he can have both university acclaim and general public acclaim; how good!
4. Inflationary enrollments put pressures on faculty members to increase their teaching loads; faculty members need obvious protection against such pressures in order to do research; project administration of research provides that protection.

5. Fields of knowledge are rapidly increasing in complexity; specialization in research is often necessary at a level beyond that which can be readily shared with undergraduate or graduate students, teaching-wise; protection for research beyond teaching usage is necessary and available in project packaging.

6. Since much research is now inter-departmental, the traditional lines of financing by departments no longer works. Project financing provides flexibility to fit inter-departmental situations.

7. The first moneys for research have been gift moneys in which the donors could feel satisfaction if they could see the specific contribution of their donations; specific research projects allow the donors this satisfaction; the same precedent serves for contract research.

8. Income from gifts and "profits" on contract research has been too small to amount to anything worthwhile if distributed over the full range of departments and faculty members; project administration of research money avoids the problem of fruitless scattering.

9. Contract moneys for research are often tied to loudly proclaimed and genuine needs of the nation for survival in a cold war world; doing such research is obvious service to the nation and thereby personally satisfying in ways competing with personal satisfactions from teaching.

10. Much research is quite expensive, particularly in technological lines where national interests are most obviously focused; special funds, set aside specifically for given work, are necessary to get the research done.

11. The academic tradition implies that every professor should be a research man and that highest status in a university is to be given to those men who turn out the most or best research; promotions are used to support this policy; research has a prime value in the academic community.

12. The accepted means for determining promotions is a group of one's peers; if this means is acceptable for judging one's own promotion, it is acceptable for judging one's project; hence the precedent of using a representative group of one's peers for judging research projects.

13. Although research, by tradition, is highly valued, teaching is also highly valued; as enrollment pressures increase, as fields of knowledge become more complex, as curriculum problems become more severe, and as research men peel off from teaching to do separated research work, the good teacher becomes a freshly valued man; in this line of reaction, some administrators and some teachers now choose to put higher value on teaching than on research; the contest between teaching and research thus comes into the open as an issue.

TRANSITION

There are still deeper reasons for the split between teaching and research and still more fundamental splits in the university, embedded in subtle but pervasive shifts of academic power which have come about as the university has grown between 1900 and 1960 from small to large, from simple to complex.

B PROPOSITIONS RELATING TO FUNDAMENTAL SHIFTS SINCE 1900

Proposition No. 5 - In 1900, the university community could guide itself through problems of internal management by giving undivided academic power to its faculty.

In 1900, the individual faculty member, in the normal range of his daily experience, could confront the diversity of interrelated problems with which the institution was faced. When seated with the assembled faculty to make an institutional decision, he could honor the integrity of institutional operation by virtue of his capacity to render holistic judgments, foreseeing the multiple consequences of potential decisions on varied aspects of the university. The faculty could be a community and could operate as one because its individual members could each comprehend the totality within their concrete personal experience.

With legislative and judicial functions carried out by faculty assembly, the executive and leadership functions could be carried out by personalities cast in the role of representatives of the faculty. Department chairmen could be clearly perceived as chairmen, responsible to their departmental staffs for fulfilling the perspectives of the faculty group. The president of the University could be construed as the faculty man whose business it was to fend for the faculty when facing the world beyond the campus. The community was small enough to make personal acquaintanceship possible among most of its members so that those given leadership posts could be seen as persons personally responsible for the welfare of one another in the total communal enterprise. Authority was given by the group; neither specialization of function nor other separation was then sufficient to put administrators in a class apart from the personal and direct claims of the individuals in the group. The rules of the game were those of a personally responsive morality.

In such a cultural context, the image of the university as an institution-run-by-its-faculty was born and consolidated into the lore of higher education. Faculty members, not being granted top status by the general culture, could in this way claim top spot for themselves in a community run by themselves. To this image was attached a series of rationalizations about the sanctity of the academic function in a society, aimed at preserving the virtue of the university-in-its-own-right, regardless of the projections of a society upon it. Within this body of rationalizations, the professor could assure himself of his own virtue whether society had the good grace to acknowledge it or not.

Proposition No. 6 - Since 1900, the world beyond the campus has undergone profound changes which have brought about consequent changes inside the university.

Since 1900, the world beyond the campus has undergone war, depression, war and a continuing uneasy peace. It has proliferated a powerful technology, realigning values of education according to need for advanced training in new occupations. New professions have become necessary as complexity of the social and intellectual order has accompanied the complexity of economic production and consumption. As the people have changed in their needs and in their perceptions of preparation of life in the modern world, the universities have changed from small to large, from simple to complex.

So, outside pressure has brought changes inside the campus. Since World War II, these changes have accelerated at a near exhausting pace. Into the private speech of conscientious leaders of higher education, there now commonly appears a deeply plaintive note, expressing a hope-all-but-lost that they shall ever be able to gain commanding perspective and intelligent control of what is happening inside their institutions. The note of plaintiveness derives from a feeling not only of having gotten behind in the game, but perhaps of having lost the ball altogether.

Proposition No. 7 - The university has lost access to a center of responsive power.

What was formerly a clear center of power, i.e. the assembled faculty, is no longer a feasible instrument of institutional decision. It is too big, too diverse. If it were assembled, its individuals would not be sufficiently holistic in their experience of the total situation to be able to judge with confidence the best course to take in many, if not most, of the situations presented.

In lieu of government by the total faculty, what has evolved by a series of accretions are several smaller units of faculty set up to carry out specified responsibilities of the institution. Typically, a university has a sizeable "faculty council", made up of representatives of the academic staff, to take up the prerogatives formerly held by the total faculty assembly. Feeding into this council are a number of sub-councils, made up of appointive and ex-officio personnel, taking responsibility for monitoring different major functions of the university. Chief among these sub-councils are such as a council on instruction, a council on research, a council on off-campus services, a council on athletics, a graduate council. Subordinate in the total complex are still further councils, committees, boards, institutes (e.g. a library council, a committee on student discipline, an admissions board, an institute for research on human growth). Such units overlay or cross through the traditional colleges, schools, bureaus, experiment stations, and departments.

As these varied agencies of academic power act, it is necessary, of course, to have further agencies to carry action into daily operation. The traditional administrative offices of president, deans and department chairmen, largely adequate for administration in 1900, are no longer adequate. New offices, centers and services are necessary. These tend to be grouped according to major functions of university operation, being formed into such areas as those of curriculum, research, business, physical plant, space utilization, long-range planning, student relations, public relations. Manning these units are vice presidents, executive heads, personnel deans, directors and supervisors. In large universities, mere naming of the university's governmental and administrative agencies and their personnel can take twenty pages in a campus directory.

Proposition No. 8 - With academic power and operational responsibility divided and subdivided, again and again, the image of the university as an integral community progressively dissipates.

Faculty members tend to give up their own sense of integral responsibility for the university community. They turn over to student personnel offices the responsibility for guidance, counseling and care of the students, retaining to themselves the teaching and grading of students on work done in their courses, feeling that classroom teaching and grading is now their sufficient obligation to students. To curriculum committees they turn over the responsibility for making sense out of curricular patterns, feeling that, as individuals, they lack the information necessary to really know what makes sense for the students beyong the limits of courses in their particular areas. To the council on research and related bodies, they turn over the responsibility for designing the administration of research activity in the university, feeling their individual interests are met if they can but know the lines by which they can submit their own research proposals. To the university office for long-range planning, they turn over the large responsibility for designing the university of the future; this problem is much too large and complex to hope for personal mastery, given the work a faculty member is expected to do in classes and research. For the rank and file of the faculty, their original holistic authority is now divided, delegated and significantly abrogated.

In the operation of the university, these dividings have their consequences for those who undertake leadership in the development of the university. To illustrate by an example: A new building makes possible added space in order that a given instructional area may round out its program for its major students. The office of space utilization, wanting to do its part in developing the university's program, allocates the necessary space. The business office, seeing that space is possible and also wanting to do its part, grants the necessary funds for requisite new equipment. The council on instruction then receives from the department their request for the new courses which the space and equipment now make possible. The council, acting from its perspective and with its portion of power, denies the request. The actions of the business office and the office of space utilization are thus nullified. Their administrators, taking forward steps in the light of their portion of perspective and power, have done useless work; so also has the department chairman and his faculty.

One might observe that this situation could have been avoided had there been "better management," i.e., had the department cleared with the council first. The catch is that the council, had it been favorable to the new courses, would not have approved them without evidence that space and equipment were available to teach the courses properly. Practically, it makes little difference which one of the various parts of the power structure one touches first; in the end, the full complement is necessary. Any one part can deny and negate all the rest. Parts of the whole continually do so.

In this circumstance, it is remarkable that universities get on as well as they do. The fact that such is possible is a tribute to the operational capability and heightened social sensitivity of those in administrative and faculty leadership roles.

TRANSITION

The reality of the situation is that the problem of leadership is bigger than most men can solve, no matter how able they may be, so long as they accept the present institutional context as suitable for their action.

It is the most able men who are most likely now to sense that the ball may be lost. They cannot take a sufficiently comprehensive grip on the situation to really take hold. If anyone has power to act, it seems to each that it must be some other; one certainly cannot do it himself. A prevailing question becomes, how does one take leadership in a university today? The question is naked and sharply real.

A progressive increase in size and complexity, bringing progressive division of power and responsibility, now culminates in a condition in which no one can take positive leadership command.

C. PROPOSITIONS RELATING TO THE LEADERSHIP SITUATION

Proposition No. 9 - Neither faculty men or administrators now feel that they can take leadership command.

The rank and file of the faculty feel they cannot take leadership because they do not own enough of the total complex of the community to make their efforts significantly effective. Administrators feel they cannot take leadership for the same reason plus the further significant fact that the university is ultimately an academic community. The professors are professional personnel responsible to their own judgment and to no one else for ultimate decisions on what is fitting for the university to do. Administrators can take responsibility for the management of enterprises already agreed upon in the university community, but they cannot presume to take the prerogatives of final academic authority. So neither the administrator or faculty man feels able to take confident command.

Contributing to lack of confidence on the part of administrator or faculty member is the latent feeling that even if he were somehow to acquire full leadership power, he would not really know what to do with it. The ramifications of significant decisions in the total complexity of the university community are too broad and entangled to be intellectually comprehended by any one man. Without confident intellectual command, confident social command is not possible either. The safer alternative is to retreat inside the limits of which one can be sure, i.e. for the faculty man to retreat to the confines of his classroom teaching and project research, and for the administrator to retreat to the management of activities clearly recognized and accepted as inside his established official domain.

Proposition No. 10 - With shrinkage in sense of command, there is shrinkage also in sense of ego, leading to resentment and a split between faculty and administration.

Faculty members, nourishing themselves on inherited visions of the pastoral campus in which the professor's way of life is the dominant pattern and the professor the dominant figure, find their loss of command a hurtful loss of ego, too. Resentment is easily nourished, searching for a target. Serving this purpose admirably are the administrators, who increasing in numbers, become ready symbols for competencies now required which the professor does not himself now possess, and symbols, too, of outside pressures which seem constantly to be forcing their way into the traditional domain over which the professor had thought himself entitled to full command. Administrators, construing themselves primarily as agents serving the cause of the academic man, have the right to expect to receive from professors, not resentment, but expressions of gratitude for services rendered in behalf of the academic cause; receiving few such expressions and often meeting evasiveness and subtle resistance instead, administrators can easily return the barely disguised resentment which they sense in the faculty with observations of their own concerning those in the ranks who project blame on administrators while themselves dragging their feet, protecting their personal interests, and failing to meet the conditions of the real world. A psychological wedge is driven between faculty and administration.

Proposition No. 11 - The split between faculty and administration is complicated by other cross splittings.

If the split between faculty and administration were consistent and uniform, one could work on the problem by direct attack. But there are further complications as administrators for university services confront administrators for the colleges and departments, as administrators for a college or department confront administrators of other colleges or departments; as faculty sub-groups responsible for the instructional function confront faculty sub-groups responsible for the research function; as faculty sub-groups responsible for graduate work confront faculty sub-groups responsible for undergraduate work, etc. In day to day situations, lines of loyalty are not simple or clear. Allegiances realign themselves in diverse ways as diverse issues and problems arise.

Proposition No. 12 - A psychology of management takes over; leadership is choked out.

A would-be leader, conscientious, able and devoted, can find himself fully occupied in adjusting himself to the constant flow of realignments under way as various forces inside the university recompose the vectors and valences of possible choice. Keeping in position for effective choice becomes a goal. Management ideals subtly but effectively replace leadership ideals as men give up the struggle with the complexity and ambiguity of the whole for the safer confines of a partial, already accepted and specific office function.

For the would-be leader who finds himself cast in the role of manager of particular operations, there are seductive compensations. Though he has had to give up his dreams of positive leadership in the university as a whole, he finds he has great negative power; this is recompense. Though he can't lead the university in any comprehensive way by himself, he can stop what others start. The success of the whole depends on his willingness and ability to contribute his part. The institution can't move far without him. Even if he lacks power to create, he holds power to prevent or destroy. He can remind other functionaries in the system that his participation is necessary to the success of their schemes. He can enter and withdraw from coalitions. He can add to his power by further specializing the functions inside his office operations, each new strand of identifiable operation meaning also a wider range of control of the whole since each is a negative power, without which the rest cannot function. Newly identified operations also offer opportunity for hiring new personnel. These are the familiar temptations and tendencies present in bureaucracy, present also in the modern large university.

Proposition No. 13 - The faculty faces the future with uneasiness; their mood is quickly turned to irritation in face of any new threats to present claims.

Confronting obvious social pressures for a still larger and still more complex university, the faculty sense still further loss of command, ambiguity of choice, and expansion of an intruding managerial class. They are more impressed with what they have lost, as measured against their dreams of academic life, than they are with what might be gained as measured against the potentialities of the future. Confronted with proposals for change, they are sharply conservative, whether the proposals be for changes in the curriculum, in the form of university organization, or in designs for the future campus.

When assembled in groups where their feelings can gain by contagion, their attitude toward students can approach punitive proportions in jacking up grading standards, tightening course requirements, and raising entrance barriers. Over these matters the academic man can claim direct authority because the handling of students in classes is his business and no one else's. Under conditions where enrollments bid fair to be significantly greater than resources can accommodate and the public is forced to know it, the academic man is in a position, new to him, of being able to meet pressure from outside with an equal and opposite pressure from inside. This time the public will change and he won't. This feels good--oh so good, as it does to any marginal cultural group when it finds itself suddenly in a position of power. There is considerable resentment stored up in academic men and their temptation, using the most direct route for exercise of their authority, is to take it out through tightened standards on the students.

Other avenues of expression are also used. Should questions of policy in the control of athletics come up, the faculty are prompt to name themselves as rulers over these issues, defying plebians outside the cloisters to intrude their claims on athletics in the institution. When neither students nor obvious outsiders are available as targets, the faculty will turn on one another, identifying as fringe personnel those in the midst who symbolize the newer enterprises in research and service over which the standard teaching departments do not have control, passing regulations to deny such personnel the traditional ranks and titles of the professor, except such personnel may be invited to membership in such departments, thus to guarantee commanding status and control by the present majority against a frightening and prospective day when intruders from new enterprises might conceivably be sufficient in number to make good their claims to the university as their rightful home, too.

Proposition No. 14 - Ever wary of administrators, the faculty guards against administrative initiative by asserting the power they possess in their councils at the top echelons of authority.

Gaining power by delegation directly from the ranks of the faculty, the councils effectively by-pass the line administrators in dealing with the most important questions. The line administrators represent power intruding from outside the system, powers of denial and affirmation on budget (coming from outside), and powers for making commitment to outside forces which may change the obligations of professors in the system without their initiative or consent. The faculty would rather trust delegated groups of their own kind, even though they may not know these individuals personally, than trust their administrators who are known to them personally, who are constantly on duty, and who would seem, on many grounds, to be men from whom they could expect trustworthy and intelligent leadership.

The power of these councils is complete: legislative in power to form policies and principles, judicial in power to judge the acceptability or non-acceptability of specific cases (courses in the curriculum, projects in research, etc.), executive in power to instruct their administrators what to do in carrying out their actions. Insofar as line administrators enter the process, they are perceived as entitled to do so only in the role of agent for the faculty group with whom they work. This is true not only for the department chairmen at the lowest echelon, working for their faculties, but also for the vice presidents who sit as chairmen of the sub-councils (instruction, research, etc.) who are perceived by the faculty as administrative agents for carrying out the will of these councils. In the case of the faculty council at the very top, the president, as chairman, is also perceived by the faculty as administrative agent for that group.

Proposition No. 15 - The tendency of the councils and the administrators serving them is not to act.

It is the obvious course of political wisdom for an administrator who is perceived as serving the interests of a council to make it clear that he honors and serves the interests of the faculty. An administrator who not only makes this clear but who goes further to summon up and appeal to the sense of loss of the faculty, its frustrations and insecurity, can become a powerful figure, the symbol of the faculty's man. He can keep safely in this role by channeling decisions to the faculty group with which he works, being always careful to make plain that it is the group and not he who carries the power and the responsibility.

The fact that decisions pile up in bunches, unmade, is hardly noticed by the administrator or the faculty so long as a feeling of identity in mutual involvement is maintained. For an administrator whose temperament leads him to behave in this fashion, decisions are likely to be difficult since decisions often mean that some faculty members, as against others, are likely to be hurt by many of the necessary choices; no faculty member should be hurt if it can be avoided and it can be avoided by failing to act on the problem. Administrative indecision and inaction thereby becomes readily sanctified as part of the pattern, sustained by emotional ties to the faculty.

The councils, made up of men who can give only small portions of their time to council problems and who are inexperienced in the content of much with which they are asked to deal, are not equipped either to move decisions along. The movement of the university bogs down.

Proposition No. 16 - What administrators cannot do through work with their councils they cannot do "down the line" either.

Since authority of the line administrators has been by-passed in the delegation of faculty power to the councils on important questions, what is left to the line administrators is management of what is already accepted as within the practice of the institution. This is evident when the president assembles his deans into an administrative council, or when the deans assemble their department chairmen into their executive committees, these bodies turn out to be assemblies of men primarily concerned with specific problems of making the institution run. Reviews of the minutes of these bodies will reveal their problems to be the handling of the academic calendar, the filling of classes with necessary teachers, the provision of necessary equipment and housing, the control of student traffic through the curriculum, the building of budget, etc., as requisite to the continued and smooth operation of the university.

Proposition No. 17 - Administrators, frustrated and seeking outlet, turn to the companionship of their office staffs and to the occasional use of their power over budget, but without significant effect in the leadership role.

Without sense of progress in work with faculty councils, administrators turn easily to the formation of "councils" of their own, i.e., the members of their own office staffs where the administrator's authority is direct and where there can be the comfort of a common recognition of common frustrations. Office staff meetings can benefit the management of the office and its divisions, but they offer no solution for problems which require back and forth give and take through the line with the faculty. Seductively comfortable, they offer a constant temptation to the administrator to give up his struggle to take university leadership and to settle for managing his office.

When feeling the pain of frustration, the president and deans may occasionally put forth considerable effort to make their power for development and change felt through the use of the budget. The budget is the carrot and the whip of the line administrator. But without related control also of the curriculum, personnel selection, promotion and general institutional policy, such efforts at the level of mountains usually produce results at the level of molehills. An administrator who uses manipulation of money as means to the manipulation of faculty soon finds himself getting the deepest of resistance. He has gone beyond the code of the academic man. He is much better off to avoid all appearance of manipulating budget to manipulate men; the better out is to make quite clear to the faculty that he had no choice in budget; he has merely met the necessities of obvious demands, working by formulae and following precedent.

CONCLUSION

The net effect of all these conditions is that no one has the power to take positive leadership in the development of the university as an integral enterprise--not the line administrator, not his staff, not the faculty councils, not the departments, not the colleges. Such power as any individual or unit possesses is functionally negative with respect to the whole, fully effective only in denial of what others may try, destructive of initiative and integration, self-propelling into further snarls and splits, productive of deeper paralysis.

A man who would lead in the development of the university as an integral enterprise is met with an impossible situation. He cannot take an official position and be a leader. The system, as given, will not permit it.

REVIEW AND COMMENT

Using distillations from my own experience and perspective, I have formulated seventeen propositions by which to challenge you to your own perspective on the leadership problem in universities. Recapitulated, these propositions are as follows:

Outside financing of research has established precedents which we have followed inside the university in handling our own research funds. These precedents have helped to develop two culture systems inside the university, one for normal lines of budgeting and responsibility, centering on teaching, and the other for special agencies of power for research control. The integrity of the university as intellectual and cultural leader for society is thereby being split and surrendered, in part, to the values of those who can capture special money for their particular purposes.

Supporting this split between research and teaching are other forces: inflation, competition from outside, public acclaim, increasing enrollments, research specialization, inter-departmental financing, precedent from gifts, limited "free funds for research," service in the cold war, costly research in the technologies, academic status of research, peer approval of promotions, recently heightened value of the good teacher.

These forces, in turn are embedded in subtle but pervasive shifts of academic power which have come about as the university has grown between 1900 and 1960 from small to large, from simple to complex.

In 1900, the university could guide itself through problems of internal management by giving undivided academic power to its faculty. Since then, the world beyond the campus has undergone profound change which has brought about important changes inside the university. The university has lost access to a center of responsive power. Academic power and operational responsibility have been progressively divided and subdivided until the image of the university as an integral community has dissipated, producing a situation in which the problem of leadership is bigger than men can solve so long as they accept the present institutional context as suitable for their action.

Neither faculty men nor administrators now feel that they can take leadership command. With shrinkage in sense of command, there is shrinkage also in sense of ego leading to resentment and a split between faculty and administration. This split is complicated by other cross splittings. A psychology of management takes over; leadership is choked out. The faculty faces the future with uneasiness; their mood is quickly turned to irritation in the face of any new threat to present claims. Ever wary of administrators, the faculty guards against administrative initiative by asserting the power they possess in their councils at the top echelons of authority. The tendency of these councils and their administrators is not to act. What administrators cannot do through work with their councils they cannot do "down the line" either. Administrators, thus frustrated and seeking outlet, turn to the companionship of their office staffs and to the occasional use of their power over budget, but without significant effect in the leadership role.

The net effect of all these conditions is leadership paralysis. No one has the power to take positive leadership in the development of the university as an integral enterprise. Such power as any individual or unit possesses is functionally negative with respect to the whole.

A man who would lead in the development of the university as an integral enterprise is therefore met with an impossible situation. He cannot take an official position and be a leader. The system, as such, will not permit it.

This is my perspective.

Without release of positive leadership in the university, the pressures for further size and complexity will mean that the university moves deeper into its own paralysis, with progressively decreasing capacity to give power and dignity to its leadership role in the culture. If the universities bog down, then from what agencies in the culture may we expect leadership to come for America and the modern world?

We Americans have not lived through enough basic transformations to know that fundamental rebuilding of our institutions is necessary from time to time as basic conditions in the culture cumulatively change. We have known to simply build. We then meet pressures for expansion and change with more of the same basic construction with which we began. The university of 1960 is a projection on the base of the university of 1900, without our realizing that what gave the university of 1900 its integrity is now no longer there. We have become fundamentally changed without knowing that this is so.

Among our institutions none are taken more for granted as being intrinsically right than our universities. No one on the outside of the universities feels competent to criticise or undertake fundamental criticism. Yet those of us who are on the inside, like sailors in the hold of a ship, are not in a good position to look up from our work and make a quick and sound judgment of where we are going. We are not likely to be good critics. Yet we must be. The good of the universities and the good of the people we are to serve demands it.

Self-criticism is hard work. There is little that is more difficult. Yet we must do it.

It is in this spirit that I have confronted you with my perspective to challenge your own.

A rejoinder to the effect that what I present just can't be so is no answer. Institutions can die. Institutions can suffocate those who serve them and those who are meant to be served by them.

If, in your perspective, you see positive leadership to be possible and present and adequate, then where does it show? In what circumstances? In what men? Surely we need to know.

RESEARCH DEVELOPMENT: A PROBLEM IN LEADERSHIP

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As one who has spent most of his professional life conducting or directing research, usually not in a university but always at least on the fringe of the academic world, I have had an opportunity to struggle with research development in a number of different areas. As so often happens--perhaps I could even say as usually happens--my training prepared me to conduct research in my chosen discipline; it by no means prepared me to administer a research program or make speeches about research development.

Much of what I have to say will not be new to you. I shall, however, try to draw upon my own experience to suggest some of the conditions which must be met if one hopes to develop sound research which will serve the needs of an area in which scholarship and practice are combined. The process of developing sound research is, of course, a process of developing sound research workers. This is a process of developing people who are motivated to ask questions--the right kind of questions--who know how to move toward answering those questions and who have opportunity to try to find the answers.

But what kind of people are needed? How can one know the "right" kind of questions from the "wrong" kind? How can one establish standards, or, to use a social psychologist's term, appropriate role models, for research in educational administration?

I certainly do not have all the answers--just more queries. But some of these queries derive from my having been preoccupied for more than a decade with trying to develop good research workers and significant research in another field that combines day-to-day program operations with an interest in increasing knowledge about people and how to meet their needs--the field of mental health. Perhaps a personal anecdote can serve a useful purpose. I turned to research in the mental health field, after having had a decade of research experience in other areas, because the man who was charged with directing the national mental health program got me completely intrigued with the challenge of trying to answer some questions to which he wanted answers. He was not a research worker but a psychiatrist-administrator. He did not ask sophisticated research questions, at least not in my field of conceptualization. He knew that program decisions often had to be based on insufficient knowledge but they had to be made. They could not wait for research. But he also knew that even after program decisions are made, one can continue to ask questions about them. An administrator may have to justify an approach as the best that he can do with existing knowledge; he may have to put almost all his energies into trying to make that approach pay off, but he can still ask whether an alternative approach might not be equally or more useful. And he can devote a certain portion of his resources to trying to find out. Such an administrator is one key to research development. The one to whom I refer, Dr. Robert Felix, had a lot of energy, a lot of enthusiasm and some of his curiosity infected me.

This, I think, is the first step in research development. Infect somebody. Infect them with enthusiasm for the significant problems of your field. Infect them with your own curiosity, your determination to understand. Do not demand that the problems you see must be accepted in the perspective in which you see them--but make your own analysis of what educational administration needs to know in the terms that are most cogent for you. Cogent for you--not for a systems analyst, or a small group researcher or a structural-functional sociologist. Then see where you can find a promising prospect. I was going to say "see who makes a pass at the lure," but as a fisherman whose lures are seldom taken, I decided that the metaphor would not do. You want to have a better chance of landing your prospect than that.

Perhaps I should drop all metaphors here. I assume that you are interested in the development of a variety of kinds of research on educational administration and that you yourselves will play a number of roles in this field: teacher, consultant, research investigator, fund seeker, research committee member, user of research. In all these roles you have opportunity to influence the attitudes and decisions of others. It is my conviction that you will in the long run influence the development of research most favorably by being critical and realistic about research.

It is interesting to note that during the past two decades both research and theory seem to have acquired higher prestige in the social sciences than they had before the war. We have imposing architectonic theory, far removed from systematic empirical data, in the work of Parsons and his followers, and we have "theories of the middle range"--theories that seek to account for a limited range of phenomena subject to relatively systematic empirical investigation. We still have some empirical research that simply seeks to amass "facts," but by and large the research worker at present pays obeisance to some facet of theory in formulating his problem or at least in interpreting his results.

In order for research to add to the cumulation of general knowledge, it must be based on or be useful for the testing of some theoretical formulation that transcends the immediate practical problem or constellation of facts and factors that one is dealing with. Yet, paradoxically, one of the great dangers in present day social research, in my opinion, is the tendency to be overambitious in seeking to answer general and theoretically significant questions. Small group research, for example, contains a hodge-podge of studies which give conflicting answers to questions about task - oriented and emotionally supportive leaders. Some of the studies are very good, some very bad. But despite the bulk of this research, it is difficult to come to firm, general conclusions about leadership characteristics because the contexts of the research, the situational arrangements and expectations that make a difference in how people define leadership roles and group tasks, are so often unspecified. The desire to go beyond the immediate situation in generalizing one's findings blinds the worker, prevents his seeing the crucial importance of situational contexts, and this is precisely what precludes comparing results across studies. Except as one controls the selection of group members, the giving of information, the establishment of task orientation and the conditions of group life, even among laboratory groups, each group is in a sense unique. How much more so is each community, each educational system, each board of education. Similar problems and processes may be encountered in each, similar personality types may occupy the same roles some of the time, but the constellations of factors will always be different. This you know better than I, and perhaps you are wondering what this has to do with theory, or, for that matter, how all this relates to what I said about the need to be critical and realistic about research.

We need theory, but we also need to keep close touch with the real world. When it is clear that contexts are important, one needs to analyze and classify contexts. Theories that attempt to formulate universally applicable generalizations--if we have any--are not likely to provide adequate orientation to the research worker in a field that is just beginning to systematize its knowledge. Lest I be misunderstood, let me emphasize that I am not arguing against drawing upon the most sophisticated concepts and theoretical formulations that are available. Without them we are not even census-takers. But the definition of the research problem in a field such as educational administration should, I believe, most often come from an investigation of the rich phenomena of social processes, and not from the imposition of a theory or model, no matter how promising that theory or model is for social science generally. The tendency to fly to over-elaborate theory too often leads us to ignore what we know. In the same way, the tendency to throw a lot of scraps of information into the computer, which can run an elaborate factor analysis in two minutes, often leads us to collect garbage because it is so easy to analyze. But even when served up with the spice of factor scores, it usually proves unpalatable. And it is seldom nourishing. Again, I am not arguing against factor analysis or the use of computers, but let them not determine your research.

Up to now I have been talking primarily about attitudes and perspectives--perhaps it would be more accurate to say that I have been exhorting you toward particular attitudes and perspectives. As experts in educational administration, I believe that you must provide the reality testing for research in your field, whether or not you conduct the research. You must define what is problematic for you, and what kinds of information are needed in order to develop sounder practices in educational administration. But many of these problems will be subject to other definitions, other formulations. The educational system is part of the social system; the sociologist and the anthropologist have an interest in it. Problems of learning and of motivation, which are of basic importance to you, are also a major preoccupation of psychologists and psychiatrists. How do you want to involve their knowledge and their skills?

This is a question that has also been asked in the medical field, especially in the mental health field. There it is the physician who asks the question: How much of the needed research shall I try to do myself and how much shall I try to interest others in doing? Roles are still being worked out in this area, but it is of interest to note that in the past decade employment in the field of health research has become perhaps the most significant area of non-academic employment for sociologists and anthropologists. Systematic research on the distribution of disease and the correlates of various types of disease now occupies about as many social scientists as it does trained epidemiologists. The structure and functioning of the large state mental hospital, the small private mental hospital, and the general hospital have been studied from a number of perspectives. Sometimes the picture is pretty distressing, and the administrators who have been toughminded enough and courageous enough to sponsor the research have been punished by it. In other instances, the administrator's prestige has been greatly enhanced by virtue of the fact that he has demonstrated that he is interested in new ideas and in the possibilities of change.

A number of hospitals now provide positions for staff social scientists. Their jobs entail study of the functioning of these small social systems, often with considerable freedom to define their research problems in the terms most significant to them, but with some commitment to "feed back" to the institution knowledge that will be helpful in working toward more effective operation. Could comparable roles be established within local school systems? Can some highly competent social scientists be enticed to spend some time getting thoroughly acquainted with the field of education and the problems of educational administration? I gather that this is actually happening, that there are now a number of joint appointments and that in many places the welcome sign is out.

In other places, I suspect, there is a fear that the social scientist will simply take off on a tangent and will not basically help to define and carry out the research that must be done to meet program objectives. What is the use of another study of informal communication or of mobility aspirations as related to social class? The value, if not the use, will depend of course on the degree to which questions in the domain of the social scientist are germane to specific dilemmas in educational administration or to general processes underlying the operation of the educational system. Often the work of the social scientist will be germane to neither. And here the firm, critical judgment of the educational administrator must be expressed--expressed as skepticism, as a demand for reality testing and for the spelling out of potential implications, but not as a flat rejection.

In part, the disappointing performance of many social scientists when confronted with such marvelous opportunities for research is a commentary on disciplinary ethnocentrism. In part it is a reflection of their lack of research experience. Also, I think, it is a reflection on the kinds of unrealistic expectations that are often held for relatively inexperienced persons who have been trained in another field. When they are called research workers, we somehow expect them to be capable of research magic. Here again the mental health field affords a parallel situation. I can recall a dozen states and major cities in which a health officer or director of mental health activities requested consultation on securing a social scientist to assess the population's needs for mental health services and the effectiveness of current services. Most often, a request was made that we try to find a new Ph.D. who could take on the assignment. The program directors knew perfectly well that, sophisticated as they were in conducting community programs, they could not make the assessments or evaluations that they desired. Somehow, they seemed to feel that a research sociologist--e.g., a person who had a Ph.D.--could by some magical means sidestep all of the critical questions relating to criteria and problems of data collection which would have stymied them. It doesn't work that way. The most capable, senior people who have tackled the job have been able to make only a crude start in such studies.

It appears that the greatest research pay-off, for social scientists working within institutional or community programs, has come when the worker has become sufficiently immersed in the lore of the program to get a feeling of what is "problematical" both for the program personnel and for himself. This takes time and it frequently entails a good deal of muddling along. The young research worker needs to have access to senior persons in his own discipline. He needs to feel that his career line is a respectable one in the eyes of his peers and he must therefore beam some of his research contributions toward the general public of his discipline.

Few new Ph.D.'s are possessed of real sophistication in research. Most badly need a period of apprenticeship, but with our demand for research personnel only a minority secure such an apprenticeship. This makes it doubly important that we avoid magical thinking about research.

We must not expect the answer to basic questions of administrative policy in a single study. We must remember that in a sense each community or school system affords only a single observation for research on administrative arrangements. It may take a dozen studies or it may take a hundred to begin to close in on some of the answers to our persistent questions. Research on human behavior takes longer and costs more than laboratory studies. Being subject to more uncontrolled variables, which will influence the generality of findings, studies of human behavior are less likely to "add up" than are laboratory studies. Yet it is probably safe to say that 99 out of 100 laboratory studies add only a single small fragment to systematic knowledge. The "breakthroughs" come only one to a million studies.

Let me say just a bit about the need for a range of kinds of research. I dislike intensely the false distinction between basic and applied research, but since the distinction is constantly made, let me say that we need both. In the field of human behavior, it is my conviction that the best basic research has to do with problems of the real world.

In the long run, it is likely, I think, that research which deals with basic issues in such areas as motivation, learning, institutional processes, intergroup relations and purposive social change will give a better basis for decisions in educational administration than will studies directly concerned with program planning and assessment. But we cannot wait for the long run. Often a carefully planned, relatively simple study can give partial and reasonably immediate answers. For example, one wishes to know whether a proposed change in the method of allocating personnel or other resources is likely to achieve certain long-range objectives. Often the achievement of the long-range objectives is contingent on more immediate changes or happenings. If then, one can spell out one's assumptions and specify the nature of intermediate processes (which may not be sufficient but are necessary to the attainment of objectives) a study of the context and process of change may greatly aid immediate planning and incidentally add to our knowledge of such processes.

I am suggesting that we do not have to think of research with a capital R to develop the research point of view. No matter how meager his fiscal resources or how heavy the demands upon him, the person with a research point of view is looking for answers through the more or less systematic examination of his objectives and what he needs to know to attain them. Research will never provide all the answers. It will at best provide a knowledge of certain relatively stable patterns of interaction and influences among organizational attributes and processes. The administrator will have to assess the relevance of available systematic knowledge in terms of the constellations of people, institutional structures and processes that are involved in any given setting.

We have, of course, a good deal of information available now that we don't use in program planning and day-to-day administration. We know more about differences in value systems among class and ethnic groups than we use in many school systems. We need to know much more about the most effective means of communicating with different groups of children and parents whose values are sharply divergent from those of the educational system. But in how many school systems or in how many courses in educational administration is an effort made to mobilize what we do know and make the best possible use of it? This is one place where the research point of view can be transmitted and engendered in others.

Another place where one can get started is in looking at the data that are routinely generated by operating programs. Most public programs keep far more elaborate records than they ever use. If they are badly kept, of course, they may not be worth spending any time on. And if they are not absolutely required for administrative operations, such data-collecting systems might better be abolished. But often quite decent data are collected--and then never analyzed. Can we ask our record systems some meaningful questions? This is one place where the graduate student can often do something useful that is within his competence.

A step removed would be the use of such record systems for getting more strategic information--on staff dynamics relative to population dynamics, for example. This is research with a small r, but it can provide the basis for formulating some bigger questions. It can occasionally make us realize that some of our assumptions have been all wet.

Let me offer just a few comments on research organization. It will be apparent from what I have said already that I believe much can be done by the individual or small team possessed of substantive knowledge and research skills. It has been observed that perhaps the best kind of interdisciplinary research is that which combines "two skills in one skull." But at times the existence of a larger, more grossly interdisciplinary research establishment can help to focus attention and effort in a way that catalyzes research development for a whole field.

I regret that I am not familiar with the research establishments that you now have or that are in process of becoming in educational administration. At the risk of being fatuous, I would only say that I hope they do or will bring together persons who are intent on getting the answers to every-day problems of administration with other persons who are sophisticated in research and theory, and that they will not become prematurely committed to demonstrating the usefulness of global theories of administration. Such programs or establishments have a potential for building up the masses of empirical data and limited generalizations which permit substantial advances in our formulations of knowledge. They have a potential for the training of first-rate research workers who can attract and develop other research personnel of high quality.

What I am trying to convey is that research development--and efforts to provide leadership in research development--calls for both a point of view and some selective breeding. It is a matter of thinking in analytic terms and seeking for relevant knowledge about the processes that underlie operations of the educational system and its interaction with other social systems. And it is a matter of nurturing and rewarding promise.

It is not enough to say that we must have more research in this field. Research has got to become a way of thinking that is taken for granted. I don't think it matters much what disciplinary label the research worker wears if he can combine a first-hand knowledge of the field and its problems with a realistic, persistent research orientation. This is the kind of person who can become a role model, who will help to infect others with research enthusiasm One needs such models and clear evidence that there are important jobs for them to do, with a secure career line. The fact of conferences like this one suggests that the evidence will be easy to provide.

I suspect that education is now well on the way to a blossoming of significant research and a more effective utilization of research knowledge. One will not come without the other. The biggest danger, I think, is in trying to do too much--in tackling research that cannot be well done. Just as bad money drives good money out of circulation, bad research will in the long run endanger the possibility of support for good research. In conclusion, then, I say again, be research oriented, but be critical.

RESEARCH PRIORITIES IN SCHOOL ADMINISTRATION

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Significant research deals not just with the phenomena and their interaction existent in the field; but rather with: (a) Predictions of the way they will vary and interact as the field is defined and manipulated to meet changing situations, and (b) new phenomena as the field itself grows and interacts with its environment. In short, if we are to understand school administration, we must investigate what it is today, what it obviously will become and whatever it may encompass in the future. As a matter of fact, the great short cuts in man's march forward have occurred when the researcher was not aware he was attacking the problem his research was to influence so greatly later. Witness Mendel's germ theory which has opened up such fields as epidemiology, pharmacology, antibiotics, etc... "Basic Research is the cutting of paths through the unknown."[1] The unknown cannot always be identified and described. Research priorities, therefore, are not readily obvious and describable.

Furthermore, the function and process of research make it difficult if not impossible for one person or group to direct the research motive and efforts of another person or group. Asimov in his Intelligent Man's Guide to Science suggests that every organism has a kind of curiosity; the higher the organism the greater the level of curiosity. Since man is of the highest order he has a curiosity-surplus; i.e. more curiosity than required simply to meet his physical survival needs. A highly intelligent man has such a surplus that he gains satisfaction from simply exercising his mind to satisfy his curiosity. Simply stated, man is not satisfied with his state of knowledge. He wants to know and understand more. Research, then, is a process of knowing-- a way of learning. It is its own nutriment because the more man learns the more he recognizes the inadequacy of his knowledge. This is the dynamic which causes research to beget research. Each new discovery tends to sharpen both the curiosity and the field of search. It is difficult to assess another's state of knowledge; it is impossible to predict the status of knowledge in school administration next year or at any period in the future.

There are other dangers in efforts to lay out research priorities. Inevitably research needs are stated in terms of current and definable operational problems. The questions all seem to get introduced with how instead of what and why. Such an approach fails to yield significant questions simply because the need for able school administrators and professors today cannot be expressed in terms of skills, techniques and practices. As Silberman stated in the April 1961 edition of Fortune, "an education designed to prepare people for specific vocations and professions or to facilitate their adjustment to the world as it is, is impractical." What we need in school administration is preparation to deal with problems not yet defined, work in relationships so far unformed, utilize resources not yet pooled, and design school programs to teach subjects beyond our present conceptions. If the schools are to play a positive role in the present world-wide struggle for enlightenment and the intellectual consequences of that struggle; if, indeed, they are to maintain even the "steady state," their leaders need to be less concerned with specific techniques and practices and more determined to learn ways of coping with change itself. Learning how to learn! Because most of their specific problems of tomorrow do not exist today.

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[1] Scientific Progress, The Universities, and The Federal Government. President's Advisory Committee, 1960.

The danger of limiting the field of investigation and thus excluding what may be the most essential criteria or experimental variables should also make us reluctant to specify research priorities. An easy but subtle way of selling our future short is to concentrate our research energies and concepts on too narrow a field. There are real dangers here, the most serious of which is our enthusiastic haste to get the job done, to make ourselves and our field academically respectable; in short, to prove that there is a science of administration. Some worthy colleagues suggest that I am creating a straw man in this contention. I was reminded that when the Cooperative Research Program contracted with Dan Griffiths to project the needs for research in school administration, his recommendations were in terms of improving our research competence, establishing better communication among researchers, encouraging the research of social scientists, and establishing research-oriented publications. Likewise, that when Dr. Clark named a highly competent panel to define research needs, they met once and in effect said that we are not ready to circumscribe this field.

My fear that we are more prone than we realize to honor our preconceptions rather than test them, makes it easy to erect the straw man if for no other reason than to delight in his destruction. A review of the research and developments in school administration indicates that there is a definite tendency toward closure which, if allowed to continue, may crystallize our thinking prematurely. What are these indications and in what context are they operative?

First, the immediate applicability of research findings is a prime criterion in the determination of the content, design, and support of research. The significance of this criterion to the practitioner and even to the financial supporters of research is understandable. Furthermore, the atmosphere of tension and immediacy which pervades nearly all human endeavor today enhances its significance. It must be remembered, however, that research is a process of learning. The report of the Seaberg panel on Graduate Education and Basic Research points out precisely the relation of the research process to learning and warns our universities against too much concern with the practical applications of research. Much of the research which yielded today's technology was done long ago. Over a hundred years ago Maury became curious about the ocean depths and movements. Later, it was discovered that there is variation in the oxygen supply and temperature of the oceans. Those findings led to the notion that the migrations of organisms, the temperature and movements of the oceans, and the oxygen supply in the waters may be all related. The learnings from these years of studying the ocean depths render us sufficiently wise to organize and launch a project to capitalize on the findings. This story is replicated in almost every step forward mankind has taken. Still school administration is prone to restrict its capacity for learning and its ultimate wisdom by expecting a one-to-one ratio between research findings and problem solutions. The most indicative aspect of this tendency is the willingness, for one cause or another, of so many bright young minds in school administration to attempt to accommodate this expectation.

Second, our persistence in research controlled by assumptions which themselves have not been tested blocks the vision of school administration. Certain assumptions about the chain of command in organizations have controlled the input factors in studies of staff utilization, teacher evaluation, and staff morale. Variation of input is the essential character of experimental research. If, therefore, what can be hypothesized is limited, the dynamic nature of research is destroyed.

For years we struggled with the traits approach in studying the criteria of success in school administration. Our purpose was to derive criteria for pre-service selection and in-service evaluation. We simply did not succeed; we could not break through. The barrier was neither in the statistical designs nor our inability to define the traits of successful administrators. The research was good, the findings clean, and the conclusions clear. But, when we generalized from the findings about who would be successful, our predictions were highly unreliable. Consequently, we never developed valid theories for selecting administrators, chiefly because the assumptions about leadership, administration, and traits were untested. One of the most common characteristics of the research proposals submitted to CRP was the large number of assumptions justifying the significance of the experiment or design without any justification of the assumptions themselves.

Third, we have been too long entangled with an internal or closed system of criteria. We attempt to establish criteria for evaluating the goodness of schools by studying schools. Likewise, we decide what a principal ought to be by examining what principals are like. These internal criteria so completely control our selection procedures, the derivation of course content, certification standards, and in-service education programs, that it is practically impossible to screen any aspirant out once he is in.

Some external frame-of-reference is badly needed if we are to experience any growth in the profession or the research approach to its development. Talent and Society a book written two years ago by McClelland et al. discloses how treacherous this criterion problem can be and how difficult it is to get disentangled from it once a field of investigation becomes trapped.

Finally, school administration is currently enjoying a real theory binge. This is good and perhaps long overdue. Our excitement over it, however, must not render us incapable of distinguishing between the theories explaining variations in the parts from those explaining the operation of the total. Let's not make the mistake of rushing toward a unified theory! There can be no theory of school administration as an operating field of endeavor until there are well-tested theories explaining all the relevant operations in all the situations which make up the administrative field. To speculate loosely and wildly about the relevance and relation of observations unsystematically made in differing situations involving differing sets of phenomena is bound to yield nothing but a loose and untestable over-all theory. Many of the recent research proposals and some of the projects have ambitiously set out to encompass all of school administration. Persons thinking in these terms should read again and again Chapter X of Administrative Behavior in Education. Dr. Griffiths suggests that a clearly-stated set of objectively observed facts is the basis of theory formation. He then warns that the description of the situation in which the observations are made, the way the facts are stated, and knowledge of what is left out--all depend upon clearly understood and operational concepts. In short, there is not a single path to an all-encompassing theory of school administration. There are many paths, each well studied and plotted. A unified theory will begin to form at or near the point at which the paths converge.

So far, I have not been naming priorities but calling attention to the dangers inherent in any attempt to do so--no further warning seems necessary. We have experienced the frustration and almost insult to our sanity when we report that we have lost something and the lost and found secretary asks, "Where did you lose it?" Furthermore, we have almost come to realize that "the hypothesizing that leads to significant investigation takes place in the mind of the individual. From the breadth and depth of his knowledge about a problem or situation springs the insightful curiosity of the investigator concerning what else needs to be explored. If he has the ability, zeal, and inclination (curiosity-surplus), he may then hypothesize and design his research.[2]

It does seem practical and has proved helpful, however, to take stock at various points along the way. This stock-taking or assessment of where we are, the paths we have trod, and the alternatives ahead often clears the air, provides new impetus, and surely serves to reassure the tired and doubtful travelers.

My major purpose in the remainder of this paper is to point out some of the ways of taking stock in school administration and secondarily to illustrate directions such assessments might indicate.

1. Communication among researchers in a field and between them and researchers in related fields has long been recognized but seldom provided as an effective stimulant toward fruitful research. It is gradually occuring to us that communication between researchers and the consumers of research may be beneficial both to the quest for knowledge and the translation of knowledge into improved operations.

The rapid development of communications is an obvious result of face-to-face exchange among psychologists, physicists, astronomers, meteorologists, chemists, etc., as well as free interplay between them and the engineers. I am firmly convinced that the current tempo and improved quality of research in school administration is a consequence of the removal of the communication barriers between educational researchers and those in related disciplines. Incidentally, removing these barriers and initiating an effective interchange of ideas in educational administration may call for a concerted research and development attack by the UCEA. Suppose, for example, that this organization set for itself the task of identifying and relating in meaningful ways: (1) the research interests and competencies in educational administration; (2) those of individuals and groups in relevant disciplines; (3) the interpretation and editorial skills and facilities of textbook writers, professors, and publishers; (4) the abilities of able administrators to translate into improved school administration what is now known and can be learned! In other words, the UCEA may well make its most significant and unique contribution to the development of educational administration by becoming a stimulator of and center for such dynamic interchange of ideas and personnel.

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[2] Roy M. Hall, "Needed Research in Teacher Education", Address to Twelfth Annual Meeting of AACTE, Chicago, 1960.

2. A careful analysis of the extent to which the status of knowledge about one operation impinges on the status of knowledge about a sequential operation in the same field of endeavor yields cues for needed research. In the development of transportation, automobile engineers have always been hampered by the lack of progress in highway construction.

Such an imbalance exists now between administration and instruction. In other words, much that is known about human learning cannot be applied because not enough is known about administration which exists to provide for learning. Whether we adopt Bruner's notions about Process in Education, Trump's team-teaching suggestions, Lumsdaine's auto-instructional devices, or the findings now flowing out of the whole media field--all of these make tremendous demands on administration. The business of administration is to provide for learning. Inevitably, therefore, the more we learn about learning, the more we can deduce about instruction. Changes in instructional methods and aids call for changes in material, personnel, facilities, organization--changes in school administration itself. What changes? What are the relationships among all these components of educational program? What shifts in each component or arrangement of all the components impinge on administration? What new dimensions, responsibilities, functions, channels, and interactions are indicated?

Suppose, for example, that the next scene in education presents a "curriculum unbound", that is, a curriculum not contained in a classroom, a book, a teacher, a grade--not contained in any of its present dimensions, arenas, or units! What will school administration be like then? In fact, what will it have to be like to enable us to witness such a scene in education?

I feel that herein lies one of the highest research priorities in school administration. Consequently, let me develop it further. Investigations of human learning are, to me at least, "revealing a great deal about the nature and the outcomes of learning on the one hand and the purpose and structure of knowledge on the other. For a long time it was assumed that the chief outcome of education was knowledge, and that learning, therefore, was simply a process of gathering knowledge. He who could gather and retain the most knowledge was the most highly educated. The most distinguished feature of the educated person was that he could remember things and recite them. He was both informed and informative. As a result, learning became defined as a process of gathering knowledge and teaching as simply transmitting it. Likewise, intelligence was defined in terms of ability to gather and retain knowledge."

"Educational investigators have initiated a new approach entirely. They have begun to explore more deeply the nature of learning and what takes place when learning occurs and the mind matures. Already this has led to the belief that knowledge is not just a consequence of learning but it is also the fuel which the intellect consumes as it produces new ideas."

"This approach to learning makes sense and is bearing fruit. The old idea of learning made education look like a threshing machine. Nothing came out which wasn't put in. It's true that the machine did separate the dirt and the trash from the kernel, but the only purpose of the machine was to clean up, sort out, and arrange in neat little piles that which had been fed into the hopper. The new approach makes education more analogous to a power plant. Fuel is fed into the plant and transformed into power. This will drive wheels, spin turbines, operate compressors, and turn propellors. Knowledge in this sense becomes the stuff on which man's intellect feeds as it transforms knowledge into the power of thinking." [3]

Again, what are the cures for research in school administration? What happens to our philosophy and procedures for evaluating pupil progress? To our college admission standards, aptitude testing, and provision for learning resources?

3. Likewise, school administration receives cues for research from developments outside of education. We need, therefore, to cultivate our sensitivity to trends in other segments of our total society. Education is particularly susceptible to changes in socio-economic and political trends. Consequently, two current social and political phenomena are discernible, both of which will affect administration drastically but no one knows how. Nor does anyone seem disturbed. The first is the congregation of populations. If the migrations of people to the city continue, and there is no indication the trend will change, at the present rate, nearly all the people in the world will soon be living in metropolitan centers larger than we can now conceive. This will create problems of health, education, and welfare never before encountered by man. Education and particularly administration because of its very functions, will be caught up in this great assemblage of humanity. What psychological, anthropological, and sociological questions are raised as a result? What are the implications for finance, organization, supervision, power clashes, communication, public relations, and transportation!

Second, the present excitement over education is changing the relationships of school administration. Entry by the federal government into the educational field; the concern of education for national and international welfare; stepped-up educational activities by foundations, defense agencies, political organizations--all these interests provide administration with new traveling companions. Even some of the academicians have decided education is headed places and are climbing aboard. Big business sees a chance to get bigger in the educational markets. The admiral is being joined by generals, cabinet members, would-be presidents, and diplomats. What a day for education! What a day for education! What a study in motivation, personal and impersonal relationships, power clashes, intrinsic and extrinsic values and drives! Also, there are some evidences of ambivalence intrigue and schizophrenia. Seriously, the current local, national, and world-wide enthusiasm for the furor over education is already influencing administration in many ways. It affects the administrator's relationships, his ability to keep the powers and pressures balanced, his systems of communications, and the educational literacy of his pupils and parents. Already some best-sellers have been written about who runs and ought to run the schools and for what and for whom should they be run. I think it's time to separate the researchable from the non-researchable questions growing out of this educational ferment and go to work on them. This would at least reveal to the self-appointed authorities and their audiences that the decisions about some of these questions rest with the people and their value judgments, while other claims, hypotheses, and assumptions are subject to scientific investigation.

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[3] Roy M. Hall, "Frontiers of Education," Texas School Board Journal. Vol 7, No. 3, 1960.

4. A systematic and rigorous synthesis of prior research findings often adds new dimensions to hypotheses and thus sharpens our projections of research priorities. Dr. Clark explains that good research is a never-ending process in that it continually pushes back the curtains and enables scientists to discover more and more unanswered questions. The more one learns, the more he discovers that his learnings are imperfect and the nature of their imperfections. Consequently, the more research done in a field, the sharper are the hypotheses. At the same time definitive research leads to broader generalizations; that is, generalizations about the inter-relatedness of findings. It is discovered that variations in one system are related to variations in another. It is an awareness of this cumulative effect of good research which causes the Research Advisory Committee to place so much emphasis on the applicant's ability and inclination to identify, review, and synthesize relevant research. Too much of the research in education and particularly in administration fails to capitalize on prior research, thus adding little to what is known and providing no new leads.

I referred to the fact that today we are able to identify as a priority the need to investigate the potential of the sea as a food source, and that the cumulative effect of many investigations set up this priority. Such leads are growing out of our own research. We learned from biological studies of simpler organisms that whenever an organism reaches a state of uncertainty or unrest, it immediately initiates behaviors to restore satisfaction. Later, psychologists discovered through research on personality that the way a human responds to frustration, the unfamiliar, or to barriers between him and his goals is related to his emotional stability, his perceptions, etc. Out of these findings came new concepts of rigidity, flexibility, adjustment, etc. Also, from these concepts sprang much of the research about the authoritarian personality.

It is also fairly well-established that administrators tend to be authoritarian when dealing with subordinates and submissive in the presence of persons perceived to be superior. It is further known that the administrator responds to rapid change, criticism, uncertainty, etc., rather negatively. He wants either to avoid such by going back to the original state of affairs or by rushing through them or finding a quick solution.

Now Dr. Griffiths and his colleagues confirm part of this by finding that the administrator complies with suggestions, responds to outsiders, maintains relationships, seeks immediate solutions, and always checks with his peers. Dr. Griffiths finds also that administrators do not tend to analyze situations or organize work. My suggestion is that we look into this situation. What is the administrator's reaction to uncertainty? Is his lack of concern with problem analysis related to his desire for quick solutions? Is there any relationship between the personality of the administrator and his reaction to uncertainty? What capacities are required to deal positively with change? Perhaps one's incapacity to analyze problems and organize work causes him to compensate by seeking advice, or , perhaps, both these are related to personality factors or intellectual factors.

The schools must change if they are to be effective in a changing order. The administrator must be a facilitator of orderly change. He must face uncertainty positively. Can his capacity for doing so be developed?

Let's look at another cluster of findings. One study revealed that children's scores on tests of creativity rise during their first three years in school and then fall sharply. Heil at Brooklyn discovered that teachers can be reliably classified into personality types—turbulent, self-possessed, and anxious--and that their effectiveness varies with variation in type, and further, that certain types of children respond to certain types of teachers. Getzels and Jackson demonstrated that teachers react somewhat negatively to creative children. Now Thorndike and Lee claim that there is a type of person who leaves teaching and another type which remains in the profession. Is it possible that a careful synthesis of all these studies and the methodology used in them would throw some light on the extent to which the school thwarts or fosters creativity? Are the personalities and methods of teachers a factor in whatever happens? If so, is it possible also that what we have been saying about the administrator and his reaction to uncertainty, his reluctance to initiate, his inclination to maintain the status quo, etc.--is perhaps related in some way to the types of persons who leave and stay in teaching. Wild speculation you say. Yes, but sufficiently probable to warrant a concerted multiple approach to find out how wild and probable. It is, I insist, this kind of curiosity coupled with rigorous and systematic review and synthesis of what is known that enables us to speculate profitably about what is unknown.

Finally, charting the plateaus in the increments of knowledge about a field enables us to reorient our research efforts. If the plateaus are too long and too frequent, we turn research upon itself forcing it to examine its role and impact in the field. We use the scientific method to determine whether the questions bothering us are researchable; to examine the suitability of the terms, concepts, methods, and tools of the research enterprise. Perhaps one of the highest priorities in educational research is a thorough study of educational research--its strengths, weakness, impact, residues, and possibilities.

In summary, research priorities in educational administration can be stated only to the extent to which the field and all its parts have been defined. It does not seem wise or possible to establish with any degree of confidence the parameters of administration at this time. It does seem appropriate for the profession under the leadership of the UCEA to take stock of its progress to date, its status and relationships at present, and set up the activities and arrangements to move ahead. I have suggested that doing this involves at least five functional activities:

1. The establishment of communication among researchers in educational administration and between them and researchers in related fields. Inevitably, this will facilitate working relationships between researchers, professors, publishers, and all those who have responsibility for disseminating and experimenting with research findings. Likewise, it will involve the administrators themselves who must be the consumers and users of research.

2. A careful and continuing synthesis of the extent to which knowledge about school administration impinges upon the status of knowledge in related or sequential phases of education such as learning.

3. A diligent cultivation of sensitivity to trends in other segments of society, particularly those which affect administration directly.

4. A systematic and rigorous synthesis of prior research. Probably no other activity is so effective in adding new dimensions to hypotheses and sharpening projections into the future.

5. A planned study of research, itself, as used to understand educational administration and further its development.

These are priority activities! They will lead to research priorities. In short, to become genuinely curious about what is, question old concepts, test assumptions, stimulate communication among ourselves and our colleagues--these are the hallmarks of a scientific fraternity. Establishing a scientific approach to educational administration is the highest priority at present.

EDUCATIONAL RESEARCH: A NATIONAL PERSPECTIVE

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The development of new knowledge or of new applications of existing knowledge may be the "new frontier" for education in the 1960's. The qualified nature of the lead sentence is intentional. There is at least as great a likelihood that during the next decade research and researchers in education will continue to inhabit the periphery of the profession contributing little and being listened to less. The reasons for this uncertain potential are associated with the confused and confusing role research has played in the history of education.

The Place of Research in Education

The nature of education as an important social process has undoubtedly impeded the development of research in this field. Education is so vital that it will go on despite all obstacles. In the conduct of their business, if educators do not know, they will guess. With or without adequate information, education will survive. Any industry which devoted one-tenth of one percent of its resources during the 1950's to research would now be defunct. But knowing little more than was known ten years ago, retaining its place as the most unchanging institution in our society with the possible exception of the church, feeling its inadequacies but generally ignoring them, education is still here dealing with all the children of all the people "by guess and by gosh."

Research can be said to have been unable to find an appropriate place for itself in the field of education. Practitioners have not used research as a basis for their operations. The paths to school improvement have been directed toward the provision of more of what already exists--more classrooms, more books, more audio-visual aids, more teachers, more buses--and the improvement of practice on the basis of what is already known. Research has had no dynamic role to play and, as a consequence, has not had available the resources needed to play a dynamic role. The survival of research in education cannot be accounted for by its contribution to the field but rather by acceptance of the truism that every field of human endeavor can improve itself by learning more about itself.

On the other hand, models exist in a number of fields which illustrate the fact that a social process can employ research as an integral feature of its operation. The research programs and the experimental stations of the National Institutes of Health and the Department of Agriculture have provided dramatic examples of the impact which the development of new knowledge can have on social processes.

In education, however, no adequate mechanism(s) for research exist. Some limited sources of support for research in education are found through private foundations and in the Federal Government, but the objectives or goals of research in education have been spelled out in relation to improvement of the educational process rather than improvement of the research process. It is easy to find statements of educational research objectives which indicate that the goal for research in the next year or years is to unravel the mysteries of class size or grouping, but it is rare to discover such a statement which says the research goal is to create a program of educational research experiment stations. Ths is due, at least in part, to a misunderstanding of the nature of research on the part of educational policy makers. Two false assumptions are often made--(1) that we know what it is that we don't know, and (2) that the findings of research have an immediate impact on educational practice and practitioners.

If educational research is to find a place for itself, these assumptions must be examined more closely. The former denies the nature of basic research. It is a reflection of the concept of education as a closed system, which, although inaccurate, is appealing to many administrators who are searching for a way in which to order their thoughts about education. The master plan for conducting research in education is an outgrowth of this assumption. If we do know what it is we don't know, there is little reason why we cannot devise a master plan for learning what we need to know.

The second false assumption is based on a misunderstanding of the process of research and the use of research in a social field. It assumes that a research study is conducted to solve an operating problem and that after the completion of the study the solution should be applied to the problem. Occasionally, this is true but in the vast majority of cases research is directed not toward the solution of an operating problem but rather toward predicting the interaction of phenomena under certain conditions. The implications of such research for a social field depend upon the translation of the newly acquired knowledge into the context in which it may be helpful (in this case the practice of education) and the imposition on the new knowledge of the value system of the individual called upon to make operating decisions based on all the knowledge he possesses.

Acceptance of these assumptions has led to a situation in which the two major problems facing the further development of educational research appear to be (1) spelling out what is to be researched and (2) communicating the results of completed research studies to practitioners so that they can go about the job of changing what they are doing. Such an approach is appealingly simple and straightforward but unfortunately it misses the heart of the issue. The real problem, I would contend, is the construction of a mechanism or mechanisms which integrate research into the total educational process in this country and provide for the improvement of research potential in education. The task of projecting and activating such a mechanism(s) will be the major determinant of the success or failure of educational research in the next decade.

The Status of Research in Education

During the past two years I have had a number of opportunities to attempt to define the present status of research in education in the United States. These opportunities have been used to bemoan the lack of adequate resources for research (a subject which justifies bemoaning), to compare research production in education quantitatively to other fields (an appalling comparison from the point of view of education) and to analyze the qualitative strengths and weaknesses of on-going educational research. For the purposes of this paper, however, such approaches are not directly relevant, although they will certainly be alluded to, because they represent the end result of the confusing role research has had in education but do not explain the reason why the place of research in education has been defined poorly. The basic contentions in this presentation are that (1) the resources will remain inadequate until an overall mechanism for integrating research into the educational community is found, (2) the production of a large quantity of high quality research is dependent upon first the mechanism and second the resources, and (3) no case need be made for qualitative strengths illustrative of the fact that research can produce new knowledge in education since this is a self-evident truth.

There remains, nonetheless, a status analysis of educational research which is pertinent to the development of the presentation--an attempt to define the mechanism, or lack of it, for research in education in the United States which now exists. A cursory examination of the educational research scene would lead to the conclusion that at least no pre-planned mechanism has been developed to attempt to insure adequate progress in educational research. Such mechanisms as exist in fields where research has made the greatest contribution to improvement of practice provide for:

- Support, sometimes limited but often extensive, for basic research in disciplines which are related to the field and integration of research and researchers from related disciplines into the field.

- Substantial support for basic and applied researchers working directly in the field.* The criterion for determining the limit of such support is often defined as the extent to which available researchers are able to add to what is known about the field.

- Systematic storage and retrieval of new knowledge in the field.

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*The terms basic and applied research are used in a common although somewhat inaccurate and equivocal manner in this paper. Strictly speaking, it might be said that all of the basic research in education must be drawn from other disciplines since a researcher who has directed his interest to education as a social process has defined a problem in terms of its application in this field. The term basic research as used herein, however, will connote either research from related disciplines which has direct or indirect value for the field of education and research on the processes of education directed toward a better understanding of the interaction of phenomena in the field.

- Adequate training facilities to insure a flow of competent investigators to work in the field.

- Translation of research findings into a context within which the knowledge can be field tested.

- Demonstration of the new knowledge in practice and other forms of dissemination of the new knowledge to practitioners.

An analysis of the mechanisms now available in the field of education directed toward each of the necessary components in the research process may assist in setting the stage for a proposal for the next decade.

Research in Related Disciplines

There has been relatively little attention paid by educators to research in the disciplines which logically support education, i.e., sociology, psychology, anthropology, economics, political science, etc. A mere handful of illustrations can be drawn of support for research in these fields coming from educational sources. The situation in regard to the integration of research and researchers from related disciplines into the field of education appears to be changing. A review of the programs and activities of such groups as the National Academy of Sciences, the National Science Foundation, the Social Science Research Council, the American Sociological Association, and the American Psychological Association evidence a renewed and vigorous interest in the field of education. The program for this UCEA seminar is indicative of the fact that educators too are broadening their horizons beyond what has traditionally been defined as educational research. Two papers to be presented at this meeting which I have been privileged to read draw heavily upon related disciplines for their content.

A striking example of the increasing communication between educators and other scholars and researchers has been provided by the Curriculum Content Improvement program of the National Science Foundation. Although this is an example primarily of development rather than basic or applied research, it has brought together the community of scholars in the fields of mathematics and science, psychologists and learning theorists, and educational practitioners to consider the content and materials of the subjects with which they deal. An attempt has been made to relate the logical structure of a substantive area to what we know about human growth and development. An activity such as this might have been impossible a decade ago because of the chasm between the groups now involved in the studies. The next decade may be able to build upon the beginnings which have been made in the past few years.

Support for Basic and Applied Research in Education

There are a variety of sources of support now available to the educational researcher . Within the Federal Government the Cooperative Research Program and the National Defense Education Act have directly supported educational research. The newly instituted social science research program of the National Science Foundation; the National Institute of Mental Health and to a lesser extent such programs as the Office of Naval Research provide sources of support for some studies related to education. Private foundations such as Ford, Kellogg, and Carnegie have supported programs of research and social action in education for a number of years.

The sum total of such support has been paltry in quantitative terms. As was mentioned earlier in this paper, the annual estimated expenditures for research and development in education amounts to approximately one-tenth of one percent of the resources devoted to the field. The relative emphasis placed on research in education at the Federal level can be seen in gross terms by noting that in 1958 the expenditures for research and development in the United States Office of Education were equivalent to approximately one percent of that allocated to research and development in the Public Health Service and less than those provided in such agencies as the Forest Service, Commercial Fisheries, or the Bureau of Sport Fisheries and Wildlife.

The important point to be made at this juncture is not the actual amount of money available (these figures are used only for illustrative purposes) but rather whether there exists a mechanism capable of supporting the needed basic and applied research in education. The answer appears to be an unequivocal NO! Foundations can never be expected to carry the full burden of long range financing of research in any field, and the Federal Government has not yet assumed a position which would indicate that support for basic and applied research in education is or will shortly be based on the criterion of supporting educational research to the extent to which available researchers are able to add to what is known about the field.

Storage and Retrieval of New Knowledge

The responsibility for storing educational research knowledge in the United States has been assumed primarily by the American Educational Research Association through the Review of Educational Research and the Encyclopedia of Educational Research. Important as these documents have been to students of education and in spite of the best efforts of the AERA to maintain a standard of quality and excellence while operating with limited resources, they simply do not provide a systematic storage and retrieval system adequate to service the field of education. There is no single source to which an educational researcher can turn with confidence to review the recently completed research on the problem in which he is interested. There is no source to which he can turn for adequate information about on-going research in his problem area.

The field of chemistry which is producing about thirty completed research studies for every one completed in the field of education has managed to establish an automated storage and retrieval system to which a researcher can turn for up-to-date information on the variables in which he is interested. In the year 1961 the technical know-how exists to provide any field with the necessary storage and retrieval facilities through which new knowledge can be fully utilized. The field of education has no such mechanism.

Training of Researchers

The situation in regard to trained researchers in the field of education is not unrelated to the level of support for basic and applied research. Two of the chief research training resources in any field are the availability of on-going research activities on which the research trainee can work and the availability of funds to support the young researcher who is beginning his professional career. The field of education is lacking in both these regards. Opportunity to participate in research in the pre-service period has, of course, increased somewhat as the support of research has increased during the past few years. However, little progress has been made in providing situations for the bright, young researcher in his immediate post-training period. Education has generally lost the most productive research years by requiring the achievement of high professional rank before recognition is given to the academic responsibility for scholarly production through released time from regular teaching and service assignments.

The flow of new researchers into the field of education is not nearly sufficient to insure the continued development of new knowledge at the rate required for reasonable progress in education.

Field Testing of Research Findings

The engineering phase of educational research has been almost wholly neglected. Field testing of research is nearly unheard of in education. I was impressed two weeks ago while watching the "Du Pont Show of the Month" with a commercial which described Du Pont's role in the discovery and production of a substance designed to impede the growth of mold on bread. *The engineering and field testing phases of research and* development activity were presented as standard operating procedure. Education has had no such standard procedure.

Some funds are available for development and testing activities from the general sources of support mentioned earlier in this paper. The foundations have given greater attention to this research activity than any other source, but, too often, the inclination has been to skip over the engineering phase to engage immediately in broad scale field testing or to ignore both these steps and begin to engage immediately in demonstration. The best use is not being made of the little research which is being produced in education because of a failure to translate the research into a context in which it can be field tested.

Demonstration and Dissemination

There is little to be said in education about our effort to demonstrate and disseminate research findings. The nearly negligible impact of research on practice speaks for itself. There are a variety of agencies and institutions which assume that all or a part of their jobs fall in this area--the United States Office of Education, state departments of education, professional associations, school study councils, etc.--but their efforts are scattered and inadequate. The initial element of inadequacy lies in the lack of availability of significant information to disseminate. With the circumstance described above in regard to the engineering and field testing phases of research in education, this is hardly surprising. The most telling indication of the status of educational research in regard to dissemination is the identification of the primary media for the process of dissemination--the printed word. An investigation of other fields of human endeavor in which attempts have been made to employ the findings of research to affect practice leads to the conclusion that a much more dynamic mechanism is imperative.

A Proposal for the Next Decade *

The time has come for bold, new steps in the improvement of education through research. The existing mechanisms for research development must be integrated in an overall mechanism which provides for the total development of research in education. This is not meant to imply that they should lose their individual identity but rather that our planning should take them into account and provide for a total mechanism in which they serve the functions they can perform best. The bold, new steps can take a variety of directions. I would like to suggest a mechanism in this paper which is one way of meeting the challenge. My vision for educational research in the next decade calls for:

- The establishment of a series of institutes of educational research organized around the substance of education and capable of:
    - Providing substantial and continuing support for basic and applied research in education to educational researchers and other interested social and behavioral scientists.
    - Supporting the needed field testing and engineering phases of research in education.
- The establishment of a national center of educational research information and data.
- The establishment of a pre- and post-doctoral scholarship and fellowship program for the development of researchers in education.
- The establishment of State and/or regional experiment centers for the demonstration and dissemination of research findings to practitioners.

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* The proposals included in this section of the paper reflect my personal views and are not to be construed as policy statements or program plans of the United States Office of Education.

Institutes of Educational Research

The national institutes should be organized to reflect the substance of education and might be modelled roughly after the National Institues of Health. For discussion purposes, I would suggest six such institutes built around areas which reflect one way of categorizing the substance of education and appear to encompass education at all levels. Note particularly that the institutes represent the substance of the field rather than the way in which the clientele of the field have organized themselves for action purposes. This, it seems to me, is an important distinction to maintain, whatever other deficiencies might exist in the specific categorizations chosen herein. The suggested first six categories are:

- The Nature of Mental Abilities
- The Teaching-Learning Process
- The Education of Special Groups of Learners
- The Sociology of Education
- The Personnel, Organization, Facilities, and Finance of Education
- The Substance of the Curriculum

Each of these institutes would maintain a staff of interdisciplinary research specialists who would work with colleges, universities, State education agencies, professional organizations, and other appropriate agencies to develop new knowledge and new applications of existing knowledge in its area of concern. The purpose of each institute would be to support basic and applied research and field testing on a project-by-project and long-range grant or development basis, to engage in whatever research development and planning activities seen appropriate to their area at a given time, and to assist in the development of the State research experiment centers.

A National Center of Educational Research Information

Attached to the organizational mechanism which houses the institutes but operating on a basis which encompasses all the institutes would be the Center for Educational Research Information. The center would be charged with the responsibility of storing not only research information directed specifically toward education but also research information from the behavioral and social sciences which might be of interest to educational researchers. The operation of the center should be world-wide in scope, introducing on a systematic basis research from all countries for the use of American educational researchers and providing an exchange service for research workers in other nations. The center should be equipped to retrieve abstracts of all studies relating to a particular variable or set of variables, and the sources of information for the center should include studies in progress as well as those already completed. An adjunct service of the center would be the storage and retrieval of research data in raw form, instruments, questionnaires, and other non-accessible materials of value to researchers.

Scholarship and Fellowship Program

This program should be directed toward three pools of research talent--the student at the pre-doctoral level, the inexperienced researchers at the immediate post-doctoral level, and the experienced researcher who needs and desires in-service educational experiences. The cost of establishing and maintaining such research training opportunities is not and cannot be borne alone by the colleges and universities. Without specifying unnecessary details in the operation of such a program, it seems evident that Federal support is needed with emphasis in providing the support directed toward the individual rather than the program of preparation in which he is enrolled.

State or Regional Educational Experiment Stations

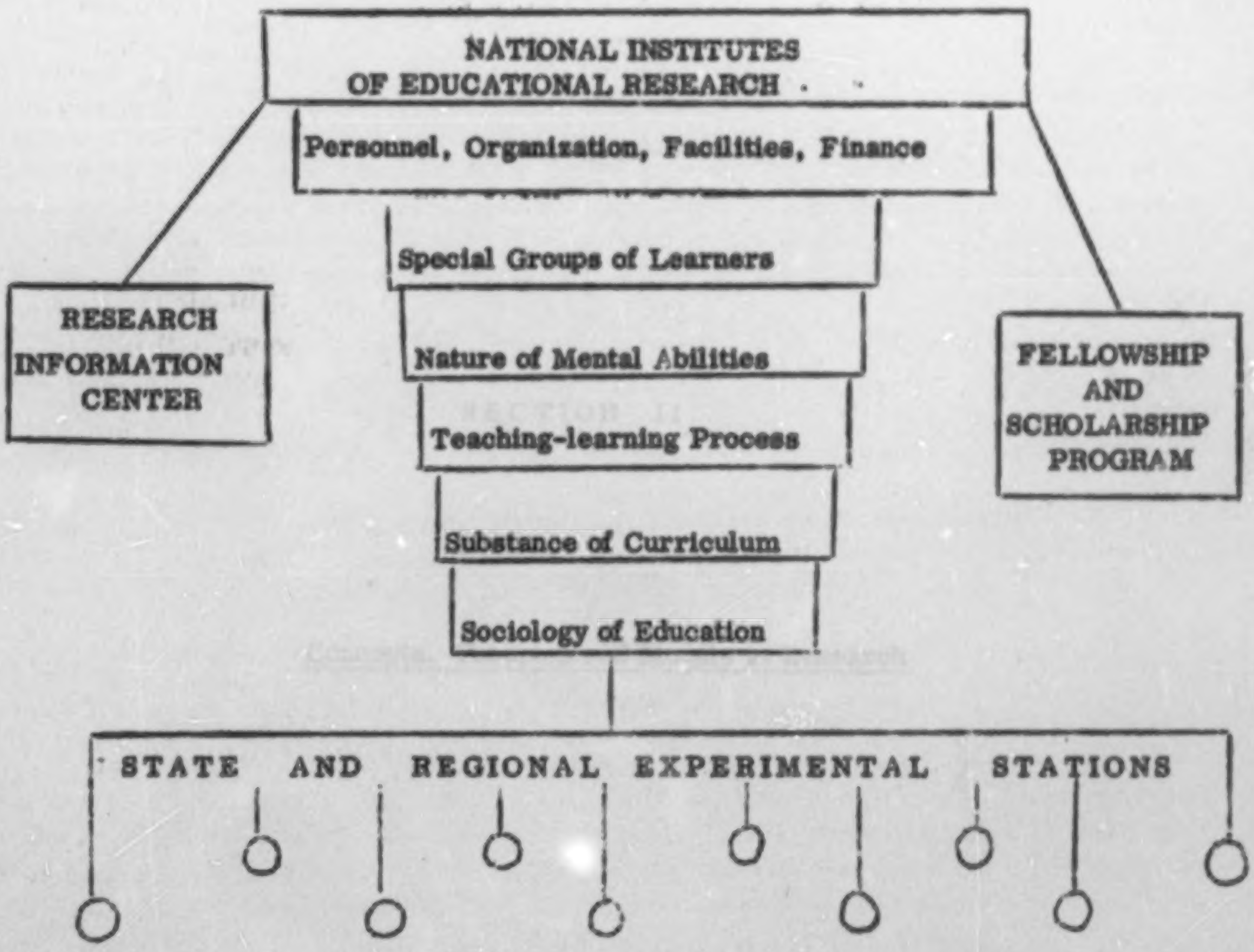
The experiment stations would be charged with responsibility for demonstrating and disseminating new knowledge about education to practitioners. In establishing these centers, attention should be paid to geographic representation in the hope that eventually every public school district in the country might have a continuing relationship with the center. The type of State or regional organization needed would vary markedly depending upon the size and organizational complexity of the State or region and the resources already available. In one area, an independent, newly established agency might be needed, in another, the State education agency would be well suited as the focal point for the center, in a third, one or a number of colleges and universities might be used as the center of operation.

Substantial and continuing support for the centers would be needed and might be obtained through a combination of State and Federal funds. Depending upon the organization within a given State or region, the center might restrict its activities to dissemination and demonstration or it might also become an important research production center particularly in the engineering and field testing phases of research. The activities of the experiment station would include a comprehensive program of publications and the use of other appropriate aids such as film, television, etc. in addition to the most important personal contact which would be provided through the operation of demonstrations throughout the service area of the center.

Summary

Research has not yet found an appropriate place for itself in the field of education. The mechanisms needed to realize the full potential of educational research are not now available. In the next decade, if we are to penetrate new frontiers of educational knowledge, we must direct ourselves toward establishing a program of research in education which provides the mechanisms needed to produce new knowledge and to introduce this knowledge to practitioners.

The proposal in this paper for providing these mechanisms includes:


NATIONAL INSTITUTES
OF EDUCATIONAL RESEARCH
Personnel, Organization, Facilities, Finance
Special Groups of Learners
Nature of Mental Abilities
Teaching-learning Process
Substance of Curriculum
Sociology of Education
RESEARCH INFORMATION CENTER
FELLOWSHIP AND SCHOLARSHIP PROGRAM
STATE AND REGIONAL EXPERIMENTAL STATIONS

There is no reason for us to continue to conduct the affairs of education in this country in the knowledge vacuum which now exists. The way out of the present situation lies not in halfway measures which are doomed to relative failure because they do not encompass the total process of research. We can, if we have the will, change the entire character of American education in the next decade through research.

SECTION II

Concepts, Theories and Models in Research

SOME ASSUMPTIONS UNDERLYING THE USE OF MODELS IN RESEARCH*

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Man seems to be unable to think in terms of unique concepts. When confronted with a problem he appears to solve it by using concepts, ideas, notions with which he is familiar. He may reorganize these concepts into new patterns and thus come up with new configurations or even new theories. This paper is concerned with the phenomenon just described, namely the solution of problems through the use of established knowledge. In formal terms, our discussion is concerned with the use of models in research.

The paper is organized into three sections each of which attempts to answer one question:

1. What is a model?

2. What are the assumptions underlying the use of models in general?

3. What are the assumptions underlying the use of specific models?

What is a Model?

One of the most used words in social science research today is model. The impression one gains from reading and from listening to social scientists is that any somewhat systematic presentation of ideas is a model. A discussion is generally prefaced by, "Now, my model is..." Of course, if the speaker can give the ideas in numbers or symbols, then it is a "mathematical" model and much better than a common ordinary verbal model.

It may be that there is no harm in this--so long as everyone knows what is going on. But this practice is just another academic perversion of a perfectly respectable idea. The real danger lies in the extrapolation of conclusions by the scientist when he uses a "model" which is not a model. This should become clear as this section is developed.

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*The author wishes to acknowledge the help of Mr. Charles R. Kelley, graduate student at Teachers College, Columbia University, in doing the research for this paper.

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No attempt will be made to trace out all of the meanings of models which are in literature, but we shall stand on the shoulders of those who have. Brodbeck appears to be the most intelligible as well as the most scholarly of the writers interested in exploring the nature of models.[1] Since she defines model more rigorously than do other writers, let us start with what she has to say.

Brodbeck points out that a statement of fact, a concept, a law, a theory, and a model are all different things. A fact is a particular thing, such as Johnny's I.Q. To state a fact is to state that a concept has an instance or a number of instances. When a fact is connected with other facts, a generalization or law is formed. As Brodbeck says, "A law states that whenever there is an instance of one kind of fact, then there is also an instance of another."[2] As an example of a law note the following: the distance a released body falls varies directly with the square of its time, that is, $d= 16\ t^2$. A law is always an empirical generalization. To move along with the argument, a theory is a deductively connected set of laws. Certain of the laws are the axioms or postulates of the theory (sometimes called assumptions.) Their truth is not so much self-evident as it is taken for granted, so that the truth of other empirical assertions called theorems, can be determined.

We need to diverge from the main point for a moment to introduce another idea, that being isomorphism. If X is a model of Y it is so because X is isomorphic to Y. Two conditions are necessary for this to obtain. First, there must be a one-to-one relationship between the elements of X and the elements of Y. Second, the elements of X must bear the same relationship to one another as do the elements of Y. If all the elements bear the same relationship to one another then the isomorphism is complete. For instance, if a model of a steam engine is also steam propelled, then the isomorphism is complete. The isomorphism of a planetarium with the heavens is not complete, however, since the motions of the planetarium are not caused by gravitational attraction. It can be said that there are both "complete" and "incomplete" isomorphisms.

Coming back to the argument concerning the definition of a model. A model train differs from a toy train in that the model is isomorphic to a real train. If the model works on the same principles as the real train, then the isomorphism is complete. Extend this idea to theories. If the laws of one theory have the same form as the laws of another theory, then the one is a model of the other. How does this work? Brodbeck uses an interesting example:[3]

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[1] May Brodbeck, "Models, Meaning, and Theories," in Llewellyn Gross, ed. Symposium on Sociological Theory (Evanston: Row, Peterson, 1959) pp. 373-403. This is an excellent article and should be read by anyone interested in this topic.

[2] Ibid. p. 377.

[3] Ibid. p. 379.

> ...suppose it is wondered whether rumor spreads like diseases. That is, can the laws of epidemiology, about which quite a bit is known, be a model for a theory of rumor transmission? Or, to say the same thing differently, do the laws about rumors have the same form as the laws about diseases? The descriptive concepts in the laws of epidemiology are first of all replaced by letter variables. This reveals the form of the laws. The concepts referring to diseases are put into one-to-one correspondence with those referring to rumors. The letter variables in the epidemiology laws are replaced by the descriptive terms referring to rumors. This results in a set of hypothese about rumors, which may or may not be confirmed. If, optimistically, these laws are confirmed, then the two theories have the same form.

The definition advocated by Brodbeck and presented in this paper is quite rigorous and may be restrictive of research in administration. It is possible to broaden the definition somewhat and still maintain sufficient clarity and rigorousness. Tyler has suggested a definition of model which appears to meet the need in administrative research. He says:[4]

> ...when an area about which we already know a good deal is used to suggest laws for an area about which little is known, then the familiar area providing the form of the laws may be called a model for the new area.

This definition is in keeping with the historical use of the term model, but is sufficiently precise and exclusive so as to guide researchers away from some of the dangers encountered in research. As a general rule Brodbeck's definition should be preferred to Tyler's, particularly if the research to be undertaken is to result in a statement of theory. However, there appear to be few theories which can be used as models in administrative research. Since the science of administration is in its infancy, it may well be that it will need to employ cruder methods--as have all other embryonic sciences.

Both definitions warn against a common evil, that is the use of areas or theories concerning which little is known as models for areas about which even less is known.

What Are the General Assumptions Underlying the Use of Models?

The models the researcher uses depend, to varying degrees, on the assumptions he holds concerning the nature of man, of the universe, and of knowledge. "To varying degrees" was used to modify the assertion because of two rather common practices:

1. The use of certain models unknowingly, that is, without an understanding of the underlying assumptions.

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[4] Ralph W. Tyler, "The Contributions of the Behavioral Sciences to Educational Research" in Frank W. Banghart, ed. First Annual Phi Delta Kappa Symposium on Educational Research (Bloomington: Phi Delta Kappa, 1960.)

2. The statement of assumptions, which one apparently likes, followed by the adoption of a model unrelated to the assumptions.

Are there any general assumptions concerning the use of models in administrative research? It would seem that there are. Certain of the assumptions are at a rather low level, but it might be well to state them for the record.

1. Einstein has been quoted as saying, "The most incomprehensible thing about the world is that is comprehensible."[5] The first assumption then, is that the world is knowable in general.[6] To those who ask, can there ever be a science of human behavior, or of administration, the answer is 'yes.'

2. The model user assumes that he can impose order on the phenomenon under study. There is a never ending argument as to whether one "discovers" order in reality, or "imposes" order on reality. For a number of reasons, the most cogent of which follows, the writer throws his lot in with the "imposers."

3. Models are culture-bound. Both Deutsch and Meadows[7] document this statement by tracing the history of models. Meadows points out:

> Thus socially conditioned, historic models may be arranged along a gradient, from the pictorial to the abstract. Originally derivations from the immediate social experience, they tended to become technological derivations, and still later became abstract societal derivations.
>
> Early man used the image of his own society as the model for physical nature. He pictured physical reality as a society of animated objects which could be influenced by talking to them through the right kind of incantations. Thus, nature was a type of anthropomorphic system.
>
> As men did things, their achievements served as models for accomplishing other things. The pyramid became a model for thinking about social hierarchy, the wheel for putting order into the heavens, the pump as a metaphor for the heart, and the clock yielded the classical model of mechanism. The machine has given way to the now dominant concept of the organism as the prevailing model of system analysis. Models are very much culture-bound.

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[5] Phillip Frank, Relativity--A Richer Truth (Boston, Beacon Press, 1950). p. 118.

[6] For an exposition of this point see Karl W. Deutsch, "Mechanism, Organism, and Society: Some Models in Natural and Social Science." Philosophy of Science, Vol. XVIII, 1951, pp. 230-231.

[7] Paul Meadows, "Models, Systems and Science," American Sociological Review, Vol. 22, No. 1, February, 1957, p. 4.

4. All models are constructs of systems. Meadows contends that the assumption that reality exists in systems is an integral part of the conceptual apparatus of current science.[8] Deutsch contends that men think in terms of models and that their models consist of structure, a pattern of distribution of relative discontinuities, and some laws of operation.[9] Meadows and Deutsch are saying the same thing; first, man thinks in terms of systems; second, through models man creates systems.

Let us now turn to two models widely used in the study of administration and examine them for their assumptions. The two models are the machine model and the open organismic system model.

What Assumptions Underlie the Use of Specific Models?

It has been pointed out that the machine model is one of the most powerful ever employed by man. Locke, Montesquieu, Newton, and a host of others explored practically every field of human endeavor using the machine model as their tool. The study of administration was profoundly influenced by this movement and school administration has not yet recovered from its impact.

Classical Organization Theory in Education

Let us consider what is called "classical organization theory."[10] There are two main lines of development in traditional organization theory; the work of Taylor focusing on the basic physical activities involved in production, and the work typified by Gulick and Urwick concerned with the organizational problems of departmental division of work and coordination. Only the work of Taylor is here considered.

While Taylor set himself to the general task of organizational theory (the analysis of interaction between the characteristics of humans and the social and task environments created by organizations) he studied primarily the use of men as adjuncts to machines in the performance of routine production tasks. March and Simon characterize Taylorism in this manner.[11]

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[8] Meadows, Ibid. p. 3.

[9] Deutsch, Op. cit. p. 230.

[10] This discussion uses as it source James G. March and Herbert A. Simon, Organizations, (New York: John Wiley, 1958) Chapter 2.

[11] Ibid. p. 13.

> In time and methods study, the scientific management group was concerned with describing the characteristics of the human organism as one might describe a relatively simple machine for performing a comparatively simple task. The goal was to use the rather inefficient human organism in the productive process in the best way possible. This was to be accomplished by specifying a detailed program of behavior (a "method," or set of methods) that would transform a general-purpose mechanism, such as a person, into a more efficient special-purpose mechanism.

Taylorism apparently made a tremendous impact on school administration, and, in fact, became one of the two basic elements in the theoretical framework employed by Strayer, Cubberley, Spaulding and other greats of the early 20th century. The other influence of equal magnitude was Thorndike who provided tools for measurement. These two forces created the educational efficiency experts who had so much to do with the shaping our American school system. Cubberley stated the analogy between industry and the schools as follows:[12]

> Every manufacturing establishment that turns out a standard product or series of products of any kind maintains a force of efficiency experts to study methods of procedure and to measure and test the output of its works. Such men ultimately bring the manufacturing establishment large returns by introducing improvements in processes and procedure, and in training the workmen to produce a larger and better output. Our schools are, in a sense, factories in which the raw products (children) are to be shaped and fashioned into products to meet the various demands of life. The specifications for manufacturing come from the demands of twentieth century civilization, and it is the business of the school to build its pupils according to the specifications laid down. This demands good tools, specialized machinery, continuous measurement of production to see if it is according to specifications, the elimination of waste in manufacture, and a large variety in the output.

Spaulding demonstrated the power of the ideas of Taylorism when applied to practical decisions regarding the educational program. In studying the cost of courses at the Newton (Mass.) High School he found that, "5.9 pupil-recitations in Greek are of the same value as 23.8 pupil-recitations in French."[13] To this Spaulding quickly added:[14]

> I know nothing about the absolute value of a recitation in Greek as compared with a recitation in French or in English. I am convinced, however, by very concrete and quite local considerations, that when the obligations of the present year expire, we ought to purchase no more Greek instruction at the rate of 5.9 pupil-recitations for a dollar. The price must go down, or we shall invest in something else.

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[12] Ellwood P. Cubberley, Public School Administration (Boston: Houghton Mifflin, Co. 1916) p. 338.

[13] Frank E. Spaulding, "The Application of the Principles of Scientific Management" National Education Association, Journal of Addresses and Proceedings, 1913.

[14] Ibid. p. 265.

What assumptions were held by the scientific management group in education? Keep in mind the model employed by these men; man was a machine, the organization was a mechanism. Since man was viewed as a machine he was considered to be an inert instrument performing tasks assigned him. Man was considered to be a closed rather than an open system. In fact, Strayer conceived the child to be a plastic nervous system and the function of education was the setting of situations in which continued response to a stimulus would "stamp in" a habit. All factors to the effects of interaction between the child and the teacher, between teacher and administrator, and between the school and its environment were ignored. School districts were viewed as mechanisms which might account for the use of the term, systems. People were considered as a given rather than as a variable in the total system. This meant that motivation was narrowly conceived, or, indeed ignored. The idea of fixed positions and interchangeable personnel has permeated the American educational system.

A recent analysis of American schools by Wayland points up the influence of the machine model. Speaking of the organization of our schools he says:[15]

> The bureaucratic system which was adopted may be viewed in two quite different ways. One may use the medical clinic as the model in which a variety of highly trained specialists carry out their practice in close proximity to each other, sharing certain common facilities and consulting each other on occasion as the problems of the client require. On the other hand, the model may be that of a factory in which the operations required of the personnel are specified by the system and in which anyone who possesses a certain minimum level of skills and aptitudes can fairly quickly learn to perform one or another of the particular operations called for. In fact, he may be called upon to change his activities if he is shifted to another position and will therefore, be called upon to learn a new set of operations. In the school system, the operations which were expected were less routinized than in the factory. However, the degree of specialization was low, the basic decisions were made by the system rather than the individual, and the expenditure of time required to complete one set of particular tasks in the system was not extensive. As in the factory, one might be called upon to perform a different set of operations and could fairly quickly make the shift. In other words, the pattern of organization was not dictated by the high degree of specialization of the staff or of the operation to be performed, but rather was a response to the demographic problem and the desire for a reasonable division of labor. As will be discussed later, this system, which may have been functional when the level of training of technicians was limited, has been retained to the present time, even though the staff members now have bachelor degrees or more.

Let us turn to a model now being used by some in the development of theories of administration.

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[15] Sloan Wayland, Structural Aspects of Education as Sources of Stability and Change, March 1961, Teachers College, Columbia University, Unpublished document, p. 14.

System-theory

What is called "system-theory" is an outgrowth of relatively new organismic conception as reflected in the work of Von Bertalanffy and Goldstein and in certain aspects of Gestalt psychology. It opposes simple reaction theories, where a virtual automaton is seen to respond discretely to stimuli.

A "system" is simply defined as a complex of elements in mutual interaction. System is a construct which has been used in almost every area of science for a long period of time. Floyd Allport offers a more comprehensive definition of system indicating it to be:[16]

> any recognizably delimited aggregate of dynamic elements that are in some way interconnected and interdependent and that continue to operate together according to certain laws and in such a way as to produce some characteristic total effect. A system, in other words, is something that is concerned with some kind of activity and preserves a kind of integration and unity; and a particular system can be recognized as distinct from other system to which, however, it may be dynamically related. Systems may be complex; they may be made up of interdependent sub-systems, each of which, though less autonomous than the entire aggregate, is nevertheless fairly distinguishable in operation.

A more succinct definition is that of Hall and Fagen, "A system is a set of objects together with relationships between the objects and between their attributes."[17] This means that a system is composed of objects which are the parts of the system; and that there are relationships among the objects and their attributes which tie the system together . Systems may be open or closed. An open system is related to and exchanges matter with its environment while a closed system is not and does not. Further, a closed system is characterized by entropy or a state of equilibrium while open systems may tend towards the steady state. All systems except the smallest have sub-systems and all but the largest have supra-systems which are their environments.

Properties of organismic, open systems -- Open systems, of course, have the properties of systems in general, but open systems have certain characteristics which distinguish them from closed systems.[18]

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[16] Floyd H. Allport, Theories of Perception and the Concept of Structure (New York: John Wiley and Sons, 1955) p. 469.

[17] A. D. Hall and R. E. Fagen in General Systems--Yearbook of the Society for the Advancement of General Systems Theory, Ludwig Von Bertalanffy and Anatol Rapoport, eds. (Ann Arbor: Braun-Brumfield, 1956) p. 18.

[18] Adapted from Gordon Hearn, Theory Building in Social Work (Toronto: University of Toronto Press, 1958) pp. 44-50.

1. Open systems exchange energy and information with their environment; that is, they have inputs and outputs.

2. Open systems tend to maintain themselves in steady states. A steady state is characterised by a constant ratio being maintained among the components of the system. A burning candle is often used to illustrate one aspect of a steady state. Upon being lighted the flame is small, but rapidly grows to its normal size and maintains this size as long as the candle and its environment exist.

3. Open systems are self-regulating. In the illustration above, a sudden draft will cause the flame to flicker, but with the cessation of the draft the flame regains its normal characteristics.

4. Open systems display equifinality; that is, identical results can be obtained from different initial conditions.

5. Open systems maintain their steady states, in part, through the dynamic interplay of sub-systems operating as functional processes. This means that the various parts of the system function without persistent conflicts which can neither be resolved nor regulated.

6. Open systems can maintain their steady states through feedback processes.

7. Open systems display progressive segregation.[19] This process occurs when the system divides into a hierarchical order of subordinate systems which gain a certain independence of each other.

Hearn summarizes the properties of open, organismic systems in this manner:[20]

> There is a dynamic interplay among the essential functional sub-processes or sub-systems in the organismic system which enables it to maintain itself in a homeostatis steady state. Assuming a sufficient input of material from its environment, the organism develops toward a characteristic state despite initial conditions (equifinality). All of this is accomplished through an automatic self-regulatory process.

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[19] Ludwig Von Bertalanffy, "An Outline of General Systems Theory," British Journal for the Philosophy of Science. Vol. 1, 1950, p . 148.

[20] Hearn, Op.Cit. pp. 48, 49.

Statement of Assumptions -- Two very general assumptions are made concerning administrative performance.[21]

1. Administrative performance is a generalized type of behavior to be found in all human organizations.

Administration is a term used to describe an aspect of behavior in a social organization. Since there are few aspects of behavior unrelated to some social organization, administrative performance is a vital and pervasive aspect of all human behavior. An extension of this point-of-view is that the adjectival varieties of administrative performance are alike rather than different. Administrative performance in a business enterprise, a hospital, a military unit, an industrial plant or a school has some apparent unique variance, but the common variance of the performance among different settings is a valid area for theoretical focus. Further, administrative performance is not to be thought of in terms of the behavior of a single person: "the administrator." Administrative performance is, rather, conceived of as an abstraction from behavior which might be present in organizations even though there were no one formally designated as an administrator.

2. Administrative performance involves the directing and controlling of behavior in a social enterprise.

This assumption means that administrative performance has as its purpose the implementation of the goals for which an organization is designed. The implementation is through such procedures as establishing criteria for the performance of individuals as they interact in the organization and establishing controls to make certain that performance agrees with plans. Administrative performance is not an artificial function superimposed on the normal activities of human beings; it rather involves the process (cycle of events) engaged in by the members of a social organization in order to control and direct the activities of the members within the organization. It can be said that administration is not the production of the organization. Barnard stated this quite clearly when he said, "Executive work is not that of the organization, but the specialized work of maintaining the organization in operation."[22]

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[21] For an elaboration of these assumptions in a different framework see Daniel E. Griffiths, Administrative Theory, (New York: Appleton-Century-Crofts , 1959.)

[22] Chester I. Barnard, The Functions of the Executive (Cambridge: Harvard University Press, 1938) p. 215.

A Theory of Administrative Performance -- It is proposed that system theory serve as a model for a theory of administrative performance. As indicated above, any system exists with subsystems and with suprasystems, but that all this means is that there are related systems of different sizes. A school district is a system comprised of human interactions which maintains a definite boundary. The school district exists in a larger system of human interactions called the school community. Existing within the school district is the system of human interactions occurring at the school building level. Thinking only of the system at the building level, attention is to be focused upon the administrative performance system. It is located at the point of tangency of the boundaries of the school building system, the school district system, and the school community system.

An individual person, of course, may be considered to be a system -- an open, organismic system.[23] But the principal as a person system is not the focus of attention here. Rather the focus is upon the administrative performance system which at many points, but not all, may coincide with a system of a specific person. In most instances, the administrative performance system is comprised of many people; however, this discussion deals with research based on an instance in which there is but one administrator, making it the simplest way of administrative performance system.[24]

Relation of Model -- The first question to be raised is, "Is the administrative performance of school principals isomorphic to systems theory?" In other words can administrative performance be conceptualized as a system? In order for there to be a complete isomorphism, there must be a one to one relation between the elements of the system and the elements of performance, and the elements of the system must bear the same relationship to one another as do the elements of performance. The test to be applied is to raise the question, "Is it possible to state certain propositions, derived from system theory which may be demonstrated to apply to a school principal?"

Performance as a System -- In order for performance to be considered as a system, it must exhibit the properties of a system. The description of administrative performance has been the major concern of the research study reported above. The findings of the study are summarized in a general way by the eight primary factors and the two second order factors found in the analysis of the in-basket work of the principals. Seven properties of open organismic systems were noted above. It is of interest to compare the findings of the study with the formal properties of an open system.

1. Input-Output

Administrative performance is conceptualized as a system existing at the point of tangency of several systems, including the school community, the school district, and the school building unit. All open, organismic systems exhibit an input-output function. Evidence of input-output are certainly clear in the administrative performance system. Factor A, Exchanging Information, is clearly an input-output factor. The performance system exchanges information with the school unit system, the school district, and the community. Factor G, Responding to Outsiders, indicates not only exchanging information with the community system, but in responding to the demands of that system. Output dimensions are noted in Factor H, Directing Others, and Factor C, Complying with Suggestions. There is abundant evidence that the administrative performance system does exchange energy and information with its environment. It has input and an output.

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[23] James G. Miller, "Towards a General Theory for the Behavioral Sciences," The American Psychologist, 10, 1955, p. 521.

[24] John Hemphill, Daniel E. Griffiths, et al. Administrative Performance and Personality (New York: Teachers College Bureau of Publications) in press.

2. Steady States

A steady state is evidenced by a constant ratio being maintained among the components of the system. Many of the findings of the study can be understood as expressions of a system maintaining itself in a steady state. The principals displayed a singular lack of concern with organizational changes or the initiation of new procedures. Comments have already indicated the need to consider leadership and administration as separate and distinct. One way to understand such a dichotomy is in terms of the maintenance of a steady state within a performance system. While a steady state was observed, it must be noted that this was not a constant state. There was some change, generally as a result of stimuli from the environment.

Since the study was essentially cross-sectional in nature and no feedback was introduced, little can be said that is based upon this about the steady state. A study employing simulation, but longitudinal in nature should be undertaken. It would then be possible to study the characteristics of the steady state over a period of time.

3. Self-regulation

When a system is disturbed, but re-establishes itself, self-regulation is apparent. There is little evidence from the study which can be brought to bear on this property. The same comments are appropriate here as are made under number 2.

4. Equifinality

This property refers to the observed fact that identical results can be obtained from different initial conditions. We note the position of the performance system as being tangential to the other three systems. The function of the performance system is to handle information and energy from all sources and to make decisions on what are perceived as problems. Factor X is noted to be a decision factor (see Table I). This factor was found to involve all of the primary factors, except Factor E, Maintaining Relationships. The important point to note is that the average performance of administrators can be plotted on the continuum from "Preparing to Decide" through to "Taking Terminal Action." Taking terminal action on a problem may be viewed as the final step of the process described as administrative performance. There is no indication that all principals go through all the stages of decison-making, but that once a problem is perceived, the terminal decision appears to be the end to be reached by entry at any place in the stages of decision making. This is not to say, however, that the same final decision could be expected by entering the decision continuum at different places.

TABLE I[25]

Stages in Decision-Making with Appropriate In-basket Scores and Their Loadings on Factor X

Stages in Decision-Making	In-Basket Scoring Categories	Loadings on Factor X
1. Recognizes a problem		
2. Prepares to clarify the problem	Arrives at a procedure for deciding	.69
	Requires further information for deciding	.63
3. Initiates work on the problem	Work scheduled for same or next day	.61
	Discusses with subordinates	.60
	Asks subordinates for information	.56
	Takes leading action	.41
4. Organizes and judges facts and opinions	Conceptual analysis	.24
	Tentative or definite plans only	.16
	Delays, postpones	.15
5. Selects alternative solutions	Follows lead by superiors	.09
	Follows lead by subordinates	-.10
6. Decides and acts	Concluding decisions	-.51
	Terminal action	-.62

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[25] Taken from John Hemphill, Daniel Griffiths, et. al. Dimensions of Administrative Performance, Contract No. 214 (6905) Cooperative Research Branch, United States Office of Education, Department of Health, Education and Welfare, May 1961, p. F.10.

5. Subsystems

The subsystems of the administrative performance system were not directly identified by the study. There are some leads, however. The factors can be considered as suggesting subsystems; thus there might be a communications system, a leadership system, and a group maintenance system. Subsystems might be construed in more traditional terms as the functions of an organization, and so there might be a supervision system, a planning system and the like. While it seems clear that there are subsystems, just what they are is not clear.

6. Feedback

Factor A. Exchanging Information, Factor C, Complying with Suggestions, Factor E, Maintaining the Organization, and Factor G, Responding to Outsiders, all reflect the presence of feedback activities, that is, responses to disturbance in the steady state. This study has little evidence to bear on feedback as a dynamic aspect of the administrative performance system, since the subjects received no feedback from their own work. Another study is needed to provide evidence of this nature.

7. Progressive Segregation

Little information has been gained concerning the structuring of the subsystems of the administrative performance system. Evidence on this property of open systems will have to wait on later research. Once subsystems are identified, it is predicted that they would tend to fall into a hierarchical order.

Propositions -- As Meadows has pointed out:[26]

> The scientist wishes to predict, and the model becomes thus a device by which assumptions are transformed into postulates. Models, then, are techniques of inference-making.

The system model presented here could lead to a number of propositions, all of which would need more research. Two propositions will be discussed simply as illustrations.

A question of major importance is, "By what means is the steady state of the administrative performance system maintained?" The structure of the system, its location asttangential to other systems tends to avoid extreme positions and to prefer to maintain a relatively even keel. This leads to proposition 1.

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[26] Paul Meadows, "Models, Systems and Science," American Sociological Review, Vol. 22, No. 1, February 1957, p. 8.

Proposition 1 - The steady state of the administrative performance system is maintained by a decison process in which satisfactory alternatives are selected rather than optimal alternatives.

Discussion -- Simon has suggested that administration man satisfices rather than maximizes.[27] As he has said,

> 1. While economic man maximizes -- selects the best alternatives from among all those available to him; his cousin, whom we shall call administrative man, satisfices--looks for a course of action that is satisfactory or "good enough." Examples of satisficing criteria that are familiar enough to businessman, if unfamiliar to most economists, are "share of the market," "adequate profit," "fair price."
>
> 2. Economic man deals with the "real world" in all its complexity. Administrative man recognizes that the world he perceives is a drastically simplified model of the buzzing, blooming confusion that constitutes the real world. He is content with this gross simplification because he believes that the real world is mostly empty--that most of the facts of the real world have no great relevance to any particular situation he is facing, and that most significant chains of causes and consequences are short and simple. Hence, he is content to leave out of account those aspects of reality--and that means most aspects--that are substantially irrelevant at a given time. He makes his choices using a simple picture of the situation that takes into account just a few of the factors that he regards as most relevant and crucial.
>
> What is the significance of these two characteristics of administrative man? First, because he satisfices, rather than maximizes, administrative man can make his choices without first examining all possible behavior alternatives and without ascertaining that these are in fact all the alternatives. Second, because he treats the world as rather "empty," and ignores the interrelatedness of all things (so stupefying to thought and action), administrative man is able to make his decisions with relatively simple rules of thumb that do not make impossible demands upon his capacity for thought.

Simon regards this explanation of administrative decision-making as verified both by common sense reasoning and through work with machine stimulated thought processes.[28]

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[27] Herbert Simon, Administrative Behavior, (New York: Macmillan, 1957) pp. xxv-xxvi.

[28] Ibid., pp. xxvi-xxviii.

Several of the scoring categories are related to the choice of alternatives. Such categories as Following Leads by Superiors and Subordinates, Making Concluding Decisions, and Taking Terminal Action could be considered as indicating that the principals restricted their world to their immediate associates and made decisions in terms of what they learned from them. Such categories as Conceptual Analysis and Uses Program Values could be considered as indicating that the principals attempted to analyze the item, to see its broad implications, and to relate the item to background information or to other items. The former was much more prevalent than the latter.

It would appear that the steady state of the administrative performance system is one in which there is more satisficing than maximizing.

> Proposition 2 - Administrative systems respond to continuously increasing stress first by a lag in response, then by an over-compensating response, and finally by a castastrophic collapse of the system.[29]

Discussion -- There is some evidence which indicates that moderate stress lifts performance above ordinary levels, but that extreme stress may cause performance to deteriorate. In the study the subjects indicated that, during the test week, they were under more stress than usual, but that they produced more than normally. The intriguing question is, "How much stress can the administrative performance system take before it collapses?" Another way of putting the question is, "What is the optimum stress which should be placed on a system so as to produce optimum performance?" There is no definitive evidence on this at present, but a rigorous testing of this proposition would provide extremely important information.

Assumptions -- What assumptions underlie the use of open organismic system as a model for the study of administration? Meadows presents one assumption which is back of the use of system as a model for research in general.[30]

1. The first assumption is rarely stated by those who employ the system as a model, namely that "reality exists in systems."[31] The argument establishing system' as a way in which reality exists was summarized by the biologist, Henderson.[32]

> It is in systems that all forms of activity manifest themselves. Therefore, any form of activity may be produced by a suitable system.

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[29] Miller, Ibid. p. 525.

[30] Paul Meadows, "Models, Systems and Science," American Sociological Review. Vol. 22, pp. 3-4, February 1957.

[31] Ibid. p. 3.

[32] L. J. Henderson, The Order of Nature, (Cambridge: Harvard University Press, 1917, p. 172.

2. It has frequently been noted that several sciences have "discovered" independently the same phenomenon or principle. This leads one to assume that a theory developed in one field might be useful in several. The assumption is, then, that the various physical and non-physical scientific disciplines constitute an interdependent whole and as such contribute to one anothers' knowledge.[33]

3. The assumption as regards the nature of the universe is that it is continually expanding and that it is an open system.

4. It is assumed that while man may be referred to as a species, he exists in great variety. Kluckhohn and Murray have said that "every man is in certain respects (a) like all other men, (b) like some other men, and (c) like no other man.[34]

5. If man has a nature, it is to be driven to create a more perfect relationship between himself and his environment. He is not content merely to adjust. Man is able to acquire and transmit knowledge and to gain increasing control over his environment.

6. It is assumed that human behavior is always the result of interaction between the biological organism and its environment. All individuals are participants in a number of interlocking networks of interaction and the organizational behavior of an individual can be understood only by reference to these networks.

The adoption of the open organismic system as a model for the study of administration might have as wide an influence as the earlier adoption of the machine by Strayer, Cubberley, and Spaulding. If this is so, then we might well be on the threshold of a new organizational structure for public education.

This paper is an attempt to define the concept of model and to explore the nature of the assumptions which underlie their use. These assumptions are often ignored. One possible outcome of this paper is that we should take the assumptions more seriously from now on!

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[33] Assumptions 2, 3, 4 and 5 are discussed in greater detail in Hearn, op. cit.

[34] Clyde Kluckhohn and Henry A. Murray, Personality in Nature, Society and Culture (2nd ed.) (New York: Alfred A. Knopf, 1953) p. 53.

CONCEPT DEVELOPMENT AND RESEARCH

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Put simply a concept is a term. It is a term which is abstract, generalized, and given a specific meaning. Examples of concepts currently being employed in administration are "decision-premise," "leadership act," "role expectation," and "authority." Concepts are essential to the researcher. They guide him in his collection of data and in his construction of measures. They are variables in the hypotheses he formulates and seeks to confirm or reject. Thus, concept development and clarification are central to research in any discipline.

In this paper,[1] two phases of concept development will be discussed: first, the sources of concepts or the question of how concepts come to be constructed and, second, criteria of adequacy or the question of what makes a concept a good one from the scientific standpoint. The major focus of the paper is on social science concepts with special emphasis upon educational administration.

Sources of Concepts

Experience is characterized by the continuous flow of interrelated events. These events are neither marked off in discrete units nor do they wear convenient labels. Thus, concepts are not automatically given in experience. Someone has to invent and refine them, and their construction is a complex human activity. Because of its creative, inventive aspects and because of the complexity inherent in the formulation of high level abstractions, concept development in the sciences is not easy to treat systematically. However, it is possible to deemphasize the psychology of concept formation and describe various ways in which concepts come to be developed in social science research. This is instructive because it throws light on one facet of the behavior of some researchers and also because it may provide guidelines for those who wish to approach concept development somewhat more systematically in their own work.

The construction of concepts may grow out of activities such as the observation and description of situations, the use of techniques like polarization and analogical reasoning, the discovery and analysis of gaps in theory, and the analysis of empirical generalizations. Threaded throughout are the elements of imagination, creativity and insight.

Observation and description of administrative situations provide a rich source for concept development. Since concepts do not emerge ready-made as part of the situations we observe, they must be built in the course of interaction between the observed and the observer. This is complicated by the fact that observations are filtered through the frame of reference the observer brings with him. However, social scientists are acutely aware of this and have developed ways of at least minimizing the element of personal bias in observation. Concepts are developed from observations in a process of reconstruction from the standpoint of the observer. They are formulated and reformulated as the observer tries them out to give meaning and system to his observations.[2]

Let us turn to some examples. In observing an elementary school principal, we make every effort to become, as anthropologists would say, "a piece of the furniture." We carefully observe as the principal carries on his activities: a conference with the assistant principal, a meeting with a parent, completion of some paper work and many telephone calls, checks on recent building maintenance, brief talks with several teachers along the way, and so on. After numerous observations, we may begin to make some provisional generalizations about the principal's behavior. We may note that he did not hesitate when called upon to make decisions, that he felt he could handle any problem that came up, that he smiled frequently and was optimistic. At this stage, we may begin to formulate in a tentative and imprecise way, the concept of self-confidence as a variable in administrator behavior.

At somewhat later stages in the research process, concepts may be developed from descriptions. For example, I have been conducting a study of college students' perceptions of the school administrator in which a relatively unstructured interview was used as a starting point. Analysis of the interview data revealed similarities in comments by a number of the interviewees. Certain concepts were then devised to fit these comments and questions designed to gather further information were tried out and eventually incorporated in a more structured interview. Concepts growing out of earlier data were made explicit and used to structure later data.

Another kind of example is to be found in the substantial study of teacher characteristics carried out by Ryans and his associates.[3] Utilizing descriptions of teacher behavior, and after considerable treatment of data including factor analysis, a number of concepts were developed which could be used to describe teacher behavior. Again, these concepts grew out of observation and description and could be utilized in still further research.

Another way in which concepts may be developed is by the use of such techniques as polarization and analogical reasoning. Polarization helps to set the limits of a concept. Hence, it is most appropriate to the early stages of concept development. To use the example of the concept of self-confidence mentioned before, it would be possible to think of concepts at each end of the self-confidence continuum. Thus, the concept of positive confidence could be used to designate certain behaviors of the administrator showing much self-confidence and the concept of negative confidence could be employed to designate behaviors showing pronounced lack of self-confidence. These designations help the researcher to set the dimensions of what is really a single concept, self-confidence. Eventually, a quantitative measure of degree of self-confidence might replace the more qualitative polar distinctions. Using polar concepts early in inquiry might also provide the researcher with some clues regarding the concepts' utility. If the behaviors which the polar concepts stand for seem related to other observed variations, the possibility of high utility is suggested. Thus, suppose four administrators, two very high in self-confidence and two very low in self-confidence, are observed. If it is noted that the subordinates of the high confidence administrators interact in a particular way with them and the subordinates of the low confidence administrators interact in a characterisitc but very different way with them, the investigator has a substantial hint that it would be worthwhile to further clarify and employ these condepts in research,

In analogical reasoning, one activity, process or thing about which we have very limited knowledge is seem to be similar in some respects to another activity, process or thing about which we have more knowledge. The assumption is then made that other similarities exist between the two.

The classical notion that an organization is a kind of machine is one example. Each position in the organization may be likened to a cog in the machine, and the task of the administrator becomes the arrangement of positions and duties to the end of efficient job performance, as well as the selection and training of individuals who will carry out these duties with precision and dispatch. In this case, job specifications, efficiency, productivity and formal organization become important concepts.

Another analogy might go something like this. Interpersonal relations are like chemical reactions in which certain elements attract one another and blend together to form new compounds. The administrator here may be seen as a kind of catalyst; one who attempts to provide for a harmonious and timely blending of people within an organization. Here concepts such as human needs, personal affinity, conflict reduction and informal organization become important.

While the pitfalls of analogical reasoning are too well known to recite here, the technique can with proper safeguards be of value in the development of concepts, often in the development of a number of concepts.

Another way in which concepts can be developed is by looking carefully at gaps in theory. A new concept or set of concepts may be needed to close the gap. For example, Gross and his associates[4] noted that the typical role theorist by-passed the question of the sources of role expectations. They pointed out that what they called the postulate of role consensus was being employed tacitly in role theory and they hold that role consensus should be treated empirically. In their own research they utilized the concept of role consensus as a variable and introduced, in addition, other concepts such as role definer, focal position and counter-position to bridge the gap in theory.

Finally, concepts can be developed through the analysis of empirical generalizations. Although all concepts are abstractions, concepts developed in this way are usually highly abstract. For example, [5] suppose that in a study of voting behavior in a school district it was noted that older persons, the poorly educated, those with low incomes and those in a lower social class tended to vote against proposals for increased school services. There are four separate empirical generalizations here, each associating a single variable with negative voting on school issues. The investigator might then seek to further explain these findings using a more abstract concept or concepts. As an illustration, the concept of status deprivation might be introduced. The negative votes in the four groups could be ascribed to the general frustration associated with status deprivation.

An example of a slightly different kind, in that it involves only a single empirical generalization, is Durkheim's classic analysis of the generalization that Catholics have a lower suicide rate than Protestants. The concept of social cohesion was central to his explanation. Noting that Catholics have greater social cohesion than Protestants, he related suicide to unrelieved anxiety and social cohesion to psychic support.

Some of the ways in which concepts can be developed have now been briefly shown. It would be clear that concept development as discussed here does not necessarily involve the creation of a brand new concept. It is frequently a matter of applying and using familiar concepts possessing varying degrees of clarity of meaning. I do not pretend that the list presented is exhaustive nor that the ways described are mutually exclusive. Also, it must be recognized that concept development is a task for which few specific rules can be given. The imaginative and creative are so central to this aspect of inquiry that it is one of these scientific activities which has about it elements of the artistic. Nevertheless, it seems useful to analyze this important phase of the research process, perhaps especially because it seems to elusive and unsystematic.

Criteria of Adequacy

Once a concept has been constructed, regardless of its genesis, it is to be assessed in terms of what it can do rather than from whence it came. In this section we will consider the question of what makes a concept an adequate one and make further comments on the concept-research relationship.

A concept should be precisely defined and its meaning clearly stated. While all subscribe to this precept, there are well known barriers to its easy achievement. First, a concept has both logical and psychological meanings. For example, we educators and most Americans attach emotive as well as logical meanings to the concepts "democratic style of leadership" and "authoritarian style of leadership." However, as researchers, we are concerned with logical meaning only. Psychological meanings may be data for the social scientist but should be eliminated from the concepts he uses in carrying out his research. Second, it is quite possible to communicate something, including research, in a meaningful way to others without being very precise. To illustrate, how often have we been aware of a study conducted, let us say, by Smith, in which morale has been discovered to be related to permissive leadership in certain kinds of organizations, without being quite certain of the precise meaning of Smith's concepts of morale and permissive leadership? The point is that the connection between concepts and the observations or events they stand for is not always made clear even in reports of research.

In some cases, this may be due to inadequate or incomplete report writing. However, it may happen because in the social sciences concepts are often used in the following way. A concept is given a rather specific meaning in ordinary prose form. Then an instrument is constructed which serves as a measure for the concept, and eventually subjects respond to the instrument. Three points of connection are problematic. First, to what extent is the prose definition connected to the definition provided by the instrument? Second, to what extent do verbal responses to the instrument mirror actual behaviors? Third, to what degree are actual behaviors related to the concept's prose definition? One way to bring the three elements into closer connection is to develop and sharpen concepts in conjunction with observations as noted earlier. A related way is by the use of operational definitions.

The operational definition has been given a good deal of attention since the rise of the logical positivists, or as some prefer to be called, the logical empiricists, in philosophy.[6] An operational definition requires that the observable conditions necessary for a concept's application be stated. The concept is said to be defined by the set of operations connecting it to conditions of observation.

The use of operational definitions provides for precision and clarity of meaning. It thereby also makes for fuller communication among researchers and facilitates replication and the possibility of cumulative research. However, the emphasis upon operational definitions could be a mixed blessing if not accompanied by the proper blending of caution and openmindedness. Thus, an operational definition should not be taken as final so that it blocks further thinking in a given area. For example, if psychologists agreed that I.Q. provides an operational definition for intelligence, this should not result in a failure to construct new and better measures of intelligence, nor in a moratorium upon theorizing about the nature of intelligence.

Since narrowness may be the price of precision, it is also necessary to be concerned about the scope of operational definitions. A measure lacking sufficient connection with events and situations in the sense that it omits too much or something crucial has very limited value. The researcher must be a good deal more than an item writer or a test builder. He must be perceptive and knowledgeable about the subject-matter of his research in order to determine which situational elements should be built into his measures. Thus, it seems appropriate again to indicate that the building and refinement of concepts with reference to observations can be especially useful.

While operational definitions are appropriate and even necessary to that stage of inquiry during which empirical research is carried on, it would be an unnecessary hindrance to require operational definitions during the earlier speculative stages of inquiry. Precision has to follow invention. An emphasis upon operational definitions should not become a bar or hindrance to theory construction. Any attempt to restrict science to pure description and correlation is erroneously narrow. Even the logical empiricist position in the philosophy of science which has emphasized operational definitions, also gives an important place to theory provided only that empirical testing can and does eventually occur.

To summarize, a concept should be precisely and clearly defined. Operational definitions are helpful and important but need to be used with careful attention to their proper place in inquiry.

Another desirable quality in a concept is that it be easily linked in statements or hypotheses to other concepts. Returning to our earlier concept of self-confidence, and assuming the concept has been more precisely defined, it should be possible to state hypotheses in which that concept is linked to others. For example, we might state as a hypothesis: administrators high in self-confidence will be perceived by subordinates as effective to a greater extent than will administrators low in self-confidence. If quantitative measures of the variables were available, the hypothesis might be stated as follows: the self-confidence of administrators will be positively related to their subordinates' perceptions of administrator effectiveness.

Especially interesting is a concept which can be related to more theoretical variables. For example, it might be possible to link the self-confidence concept to personality theory. It might also be linked to role theory as a hypothesized dimension of expectations for certain administrative roles or possibly as a role attribute. Concepts function in inquiry only as they are linked with other concepts and presented in the form of hypotheses to be tested. Thus, the degree to which a concept can be readily linked with others is a criterion of its adequacy.

Finally, utility, or the degree to which a concept achieves the purpose for which it was constructed, may be considered a criterion of adequacy. Thus, it can be maintained that when a concept is a variable in hypotheses which are confirmed by research, its value for research purposes becomes established. A more abstract concept might achieve its purpose by becoming an essential part of a pattern of explanation, even though the statements linking it with other hypotheses were confirmed only by indirect evidence.

Three criteria of adequacy have been presented. They are precision of meaning, linkability with other concepts, and utility. For their particular purposes, others may wish to emphasize one or another criterion or add new ones. However, these three seem especially useful in assessing scientific concepts.

Concluding Comments

I have dealt in a preliminary way with the question of the sources of concepts in the social sciences and the question of what makes a concept adequate.

Now I would like to make some points regarding educational administration in particular. It is well to recall that the concepts one uses function both to enlarge and to limit, in the sense that they furnish one set of glasses through which situations may be viewed. This is true for the theorist and researcher on the one hand and the practitioner on the other.

Better research in educational administration involves much more than problems of measurement and design. What is needed are more carefully constructed concepts, more thoughtful hypotheses, and better theory. We have already made some progress in measurement and design but are taking only first steps in concept development and theory construction.

I would argue that here also is a clue to improved preparation programs in educational administration. The structure of knowledge in educational administration as in other disciplines consists of concepts, generalizations or statements linking the concepts, and theories, each being dependent on the one preceding it. For the practitioner of administration, concepts structure situations. A variety of concepts can provide an enlarged frame of reference and a heightened sensitivity to people and situations. Although situations are unique, generalizations and theories can provide clues to the resolution of the problems the administrator in the field faces. A prerequisite is the scientific temper or attitude on the part of the applier. Just as this temper is necessary for the researcher and theorist, it is essential for the practitioner if he is to use the body of knowledge in his field with effectiveness. More explicit attention in preparation programs to concepts, generalizations, theory, and the development of the scientific temper seems desirable,[7] and its effect upon administrative practice should be assessed.

The development and refinement of more concepts in conjunction with empirical observations ought also help to close the theory-practice gap since concepts drawn out of events should have relatively clearer application to other events and situations. I agree with Griffiths[8] when he suggests that in education we have adopted the experimental methodology of the psychologists in much of our research, too often ignoring the observational approach of the anthropologists. That approach ought to be given more extensive trial. It might prove to be especially fruitful.

However, to emphasize the importance of observation is not to imply that we should never begin with speculative theorizing. To the contrary, the history of science shows clearly that such theorizing has special advantages, but it is necessary to test, modify, and reconstruct theory on the basis of empirical observations. Also, we should not hesitate to use concepts and theories developed in other disciplines when they appear applicable. However, their utility for the understanding of administration within educational organizations needs to be checked and made explicit. There are many roads to knowledge and we ought not block any of them, especially in a discipline like educational administration which is in its scientific infancy. It may be that greater attention to an activity like concept development will result in modifications in present approaches as well as the encouragement of new ones.

FOOTNOTES

1. I want to thank my colleague, Professor Robert H. Holtzman, for a number of helpful suggestions.

2. I prefer not to be side-tracked here by the philosophical question as to whether concepts are arbitrary inventions of man or reflections of an underlying reality. Reichenbach's view that concepts are inventions of the human mind but that not all such inventions are fit to describe the physical world seems tenable. I will also omit the question of whether a concept is a term or the idea behind a term since that issue does not appear to be important for our purposes here.

3. David G. Ryans, Characteristics of Teachers (Washington: American Council on Education, 1960).

4. Neal Gross, Ward S. Mason, and Alexander W. McEachern, Explorations in Role Analysis (New York: John Wiley and Sons, 1958).

5. This example is adapted from the work of Robert E. Agger of the University of Oregon. It has been tailored to our purposes.

6. For two collections swhich deal with the general papproach see Herbert Feigl and May Brodbeck (eds.) Readings in the Philosophy of Science (New York: Appleton-Century-Crofts, Inc., 1953); and Herbert Feigl and Wilfrid Sellars (eds.) Readings in Philosophical Analysis (New York: Appleton-Century-Crofts, Inc. 1949.) For a work emphasizing the analytical approach in the social sciences see Llewellyn Gross (ed) Symposium on Sociological Theory (White Plains: Row, Peterson and Co., 1959).

7. Values also have an important place in the administrative process and in preparation programs. However, here also more emphasis should be placed upon the analysis and clarification of value concepts and statements.

8. Daniel E. Griffiths, Administrative Theory (New York: Appleton-Century-Crofts, Inc., 1959), p. 35.

AN ASSESSMENT OF SELECTED THEORIES OF ADMINISTRATION

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One of the major concerns of this seminar, it seems to me, is well described by a phrase of Peter F. Drucker.[1] The papers and our discussion reflect a concern for the "organization of ignorance" -- the systematic review of what must be learned, developed, and tested if we are to understand, use, and improve research in educational administration. This is no small task. It requires that we come to know what we know and what we don't know. It demands that we identify some of the things we need to know and do. It also suggests that perhaps during the process of working on this never-completed task we shall come to know more about what "knowing" means. The fact that there has been a recent outpouring of theories of organizational behavior, with the accompanying increase in investigations using a variety of pieces of these theories, tends to increase rather than decrease the importance and complexity of "organizing our ignorance" and our "coming to know."

In this paper I shall attempt to carry out my assignment by discussing each of the following topics: (a) problems involved in assessing one or more theories of administration, (b) some ways of assessing one or more theories, (c) the method of assessment that was selected, and (d) the application of this method to the assessment of the Getzels-Guba "model" and Ralph M. Stogdill's "middle range theory." I shall assume, especially in the last section, that you are rather familiar with the material that was passed out at the beginning of this seminar concerning these two selected theories of administration.

Egon Guba has suggested in his paper that one of the problems of research is that of identifying and describing operationally the "information" or experimental variables, while at the same time preventing the operation of non-relevant, noisy, and confounding factors. We might say that the same problem exists in attempting to understand a theory of administration: What is included and what is excluded, and why?

Problem in the Assessment of Theories

The problem of generalizing about and assessing theories of administration presents a dilemma with many horns. Four of these "horns" are:

1. What theories are we concerned with? Some of us are concerned with administration theory in general, while others are interested primarily in a theory of educational administration. Are we concerned with theories of organizational operations, administrative behavior, or both? How can we define those "lines" that

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[1] Peter F. Drucker, Landmarks of Tomorrow (New York: Harper Brothers, 1959).

distinguish between what is pertinent and relevant and what is inappropriate and "noisy?" (Roald Campbell has commented on this problem as has H. Gordon Hullfish, the latter in "A Theoretical Consideration of Educational Administration," *Educational Theory*, VII (April, 1958), 65-75.

2. Is it possible to develop a vocabulary that can be used in looking at, describing, and comparing theories of administration or of educational administration? Dozens of authors have offered theoretical frameworks and definitions for various concepts that have over-lapped, under-lapped, ignored, spread over, and generally made hash with one another. (Simon and Griffiths focus on decision making as a central theme but seem to be talking about different things or about the same thing in different ways; there is the individual-group or the needs-product dichotomies of Getzels, Argyris, and Hemphill; Mort,Litchfield, Bass, Parsons and others have suggested different approaches; with people like Mills, Whyte, and Riesman also getting into the act.) For example, to the unitiated the following terms may appear to be synonomous, but are they identical?

Riesman	**Other-directed**	**Inner-directed**
Parsons:	**Universalism**	**Particularism**
Hemphill:	**Initiating-structure**	**Consideration**
Getzels:	**Nomothetic**	**Idiographic**

3. Is the language of social psychology most appropriate for describing administration? The phenomena with which various theories and concepts deal have as their reference points both intra-individual processes or variables (values, norms, needs, motivation, competency and inter-individual processes or variables (a system of social relationships, expectations, structure, communication) which necessitates and results in the use of both psychological and sociological terms which the psychologists and sociologists themselves seem to have difficulty in using precisely in communicating with one another. Can we communicate with administrators using non-precise and perhaps--at least for them--inappropriate terms?

4. We cannot agree with one another as to the boundaries of our area of concern regarding theory and research in educational administration. For example, present theory of educational administration is concerned almost exclusively with the local administrative unit and has little or nothing to say about the mass-education system from Washington, D.C. to Miss Smith in Room 7 at Central Grade School. We bow low before the idol of interdisciplinary approaches, yet we often reject frameworks with a scope larger than the local administrative unit. We find it difficult and inappropriate to generalize our research findings obtained in one or more school districts to school administration on all levels.

These are but a few of the many dilemmas that face a person who attempts to assess theories of educational administration. They underline the necessity of defining as precisely as possible the purpose of the assessment, for each purpose poses somewhat different problems of limits, elements, and process.

The purpose of an assessment may be for an administrator to obtain a guide for action. If so, the major interest may be in discovering what to look at in a particular situation, how to obtain needed information, and what implications for action in the specific situation is suggested by data so conceived and obtained. If our purpose is one of research, it would seem appropriate to view theories of administration as guides for (a) explaining the nature of administration, (b) obtainine new knowledge, and (c) collecting facts.[2] We may assess a theory in order to discover any fallacy in its logical structure, to identify what variables are independent and dependent, to discover its boundaries and limitations, to identify the concepts that are germane to it, to determine what methodologies might be necessary to obtain data about selected variables, or to see what hypotheses it generates. We may wish to attack a theory in order to further our own ideas or prestige. As one university professor who gloried in making inane puns, said: "It seems to me that 'analysis and assessment' are nothing much more than a kind of 'intellectual hindsight' often indulged in by sceptics and devotees of upmanship who don't have the required imagination and conceptual skill to develop or even state a concept." This latter purpose is one we should avoid, yet one of which we should be aware when reading commentaries about one or more theories of administration.

To summarize: The assessment of one or more theories of administration requires an awareness of several problems. Some of these problems are (a) appropriateness of the content, (b) lack of a common precise language, (c) the limits of the universe about which generalizations are made, (d) the purpose of the assessment, and (e) the motives of the person doing the assessment.

Some Ways of Assessing a Theory of Administration

Many approaches have been suggested for and used in analyzing theories. In developing their own theories of organizational behavior and administration persons such as March and Simon,[3] Argyris,[4] Griffiths[5], Bass[6] and others have reviewed other have reviewed other theories indicating their strengths and weaknesses and justifying their own theories as one way of alleviating some of these weaknesses. Literature on the philosophy of science contain other suggestions for analyzing a theory:

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[2] Daniel E. Griffiths, Administrative Theory (New York: Appleton-Century-Crofts, Inc., 1959), pp. 21-27.

[3] James G. March and Herbert A. Simon, Organizations (New York: John Wiley and Sons, Inc., 1958)

[4] Chris Argyris, Personality and Organization (New York: Harper and Brothers, 1957)

[5] Daniel E. Griffiths, op. cit.

[6] Bernard M. Bass, Leadership, Psychology, and Organizational Behavior (New York: Harper & Brothers, 1960)

1. Henryk Mehlberg suggests that classification of theories by type: (a) causal vs. statistical, (b) axiomatic vs. non-axiomatic, (c) phenomenological vs. transcendent, (d) emergent vs. reducible, (e) definitional, (f) quantitative, (g) with internal or external bases, etc. -- The Reach of Science, University of Toronto Press, 1958.

2. Philipp G. Frank suggests criteria for assessing a theory. A theory must (a) be true, (b) agree with observations, (c) be simple, (d) have a "dynamical character" or fertility, and (e) be compatible with common sense.--"The Variety of Reasons for the Acceptance of Scientific Theories," The Validation of Scientific Theories edited by Philipp G. Frank (Boston: Beacon Press, 1956), pp. 3-16.

3. C. W. Churchman uses another set of criteria. A theory must (a) have efficiency (making a decision using the theory will produce an outcome), (b) be objective (represent a state of nature predictable by a decision), (c) have value (contain a measure associated with each objective,) (d) have policy (a rule for selecting a decision out of a set of decisions), and (e) bring about an increase in knowledge.--"A Pragmatic Theory of Induction," in Validation of Scientific Theories, op. cit.

We might ask such questions as the following to understand the implications a theory has for educational administration:

1. Does this theory emphasize processes as self-limiting or as cumulative? Are we dealing with a stable or a changing situation? A situation with "absolite" or "relative" phenomena?
2. Is this a "value theory," or does it treat values as a variable?
3. Is this theory based on a logico-deductive system?
4. Does it take into account non-rational as well as rational behavior and events?
5. What is an (the) organization? What is the basic unit of analysis -- the individual, the group, or both? Is it macroscopic or microscopic?
6. What is the major function or task of administration as it is?
7. What are the ends and means, input and output, and how are these related?
8. With what effects is the theory concerned? What is the test of performance? (Efficiency, productivity, morale, group integration, integration of ends and means, stability, change?)

Another way of analyzing a theory of administration is to ask specific questions aimed at discovering concepts and orientation. I have used descriptive categories such as the following for graduate students to use while comparing two or more theories of administration:

1. What is the basic concept of administration?
2. What is the concept of organization or institution? What is "the group?"
3. What is the relationship of the organization to the larger environment?
4. What is the major philosophical orientation?
5. What is the major psychological orientation?
6. What are the intrapersonal and interpersonal variables?
7. What concept of "power" or "authority" is stated or implied?
8. How is "conflict" conceived?
9. What is the concept of "organization change?"
10. How was this theory developed?
11. How applicable is this framework to the practice of educational administration? To what positions in school systems?
12. How relevant is this approach for stimulating or guiding research? What kinds of research?

These various taxonomies for assessing theory merely illustrate some of the pedestrian approaches that have been and are being used. A cue for assessing a particular theory would be the author's own definition of theory. For example, let us look at how Stogdill and Guba, whose conceptual frameworks we shall examine shortly, tend to view theory:

Stogdill points out[7] that "conceptualization precedes measurement. . . . We have to develop theories before we can test them. The scientific method applies only to the testing of theories, not to the creative work involved in conceptualization, analysis, and systemization." He defines a theory in the following words:

> A theory may be regarded as a system consisting of a set of concepts, and a set of hypotheses (or formulas) which specify the interrelationships between the concepts, at least one of which is an outcome concept. The set of hypotheses predicts the relationships expected to be found in the system of measurement applied to the events observed in empirical search.

Egon Guba[8] has described theory as a way of testing, predicting, and understanding reality. A theory need bear no necessary relationship to reality and it deviates from reality in certain significant aspects. However, it will be useful only to the extent that its assumptions are reality-oriented. The three major functions of a theory, he points out, are: (a) the systemization which explains as well as describes, and (b) the pointing out of fruitful hypotheses for further study. Thus, a good theory should be inclusive, dynamic, and heuristic.

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[7] Ralph M. Stogdill, "Role Perception and Role Fulfillment in Research," a paper presented at the UCEA Research Seminar, University of North Carolina, April, 1961.

[8] Egon G. Guba, Role, Personality, and Social Behavior (Bureau of Educational Research and Service, Ohio State University, September, 1958) (Mimeographed)

These latter statements give us some insight into the creators or midwives of the theories we shall assess. They suggest a few of the standards they established for themselves. If we need to evaluate their theories more than we need to understand them, we might well use these general criteria. It is not my purpose to assess in terms of "evaluate."

The Selected Method of Assessment

If I have a particular thesis to enunciate (which was identified post hoc), it might be stated thus : A fruitful way of identifying the major questions about present concepts of organizational operations and administrative behavior that should be investigated, is to identify some areas or aspects of complimentarity of two or more theories. Whether our purpose is to identify the important concepts and questions that need to be investigated regarding one theory, or whether our purpose is to discover a higher level of concept or question than is suggested by a single theory, both purposes can be achieved through identifying some areas or aspects of complimentarity of two or more theories of administration.

This principle of complimentarity, enunciated by Niels Bohr[9] and called to our attention by Andrew Halpin,[10] points out that the use of one set of concepts by one theory in describing reality automatically excludes the use of other concepts which, however, in another connection are equally necessary for a description of the phenomena. Lawrence Durrell has shown us through his masterful Alexandria Quartet (Justine, Balthazar, Mountolive, and Clea) that one explanation of phenomena, though tenable in its own right, is not sufficient. To really understand one explanation (one theory) we must see it in relation to other explanations.

The identification of aspects of complimentarity of two or more theories of administration has several justifications:

1. The more recent theories of administration tend to emphasize attitudes and motivations as well as the rational and intellectual aspects of organizational behavior. The concepts "transaction" and "interaction" are implicit in these theories and suggest the interpenetration of subject, object, content, process, and purpose. In these terms, identifying the complimentarity between two of these more recent theories seems an appropriate--even a necessary method of assessment.

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[9] Niels Bohr, "The Quantum Postulate and the Recent Development of Atomic Theory," Nature, CXXI (April 14, 1928) , pp. 58-90.

[10] Andrew Halpin, "The Development of Theory in Educational Administration," in Administrative Theory in Education (Midwest Administration Center, University of Chicago, 1958), p. 17.

2. Complimentarity tends to result in the identification of those elements of the theories being assessed that are isomorphic. Since each theory has its own structure and must be examined only within that structure, and since the structure of one theory is usually not identical with the structure of another this isomorphism is not complete. However, the attempt to identify aspects of complimentarity necessitates looking at both theories through a structure compatible with both. The result may be the identification of constructs basic to selected aspects with which both theories are concerned.

3 Relating two or more theories is useful for instructional purposes. Practitioners or practitioners-to-be need to realize that there are various ways of looking at phenomena and that each approach is based on somewhat different assumptions and has somewhat different implications. Looking at two or more theories helps identify multiple alternatives and points out the implications obtaining from the selection of one alternative. This same reasoning seems to be employed in justifying the introduction and use of interdisciplinary approaches in preparation programs.

On quite a different level of discussion, benefits that might accrue from an examination of two or more theories of administration (keeping in mind the dangers of mixing discrete systems) include the following:

4. The empirical data accumulated in investigations based on one theory could be illuminated by concepts existing in the structure of another theory. For example, the data obtained through the use of "theory X" could be examined in terms of both "theory X" and "theory Y."

5. Concepts and hypotheses developed in, or derived from, one theory may open new problems and stimulate research by those believing in or using another theory.

6. Two groups could bring their respective theoretical frameworks to the investigation of the same phenomena so that there might result a more comprehensive methodology as well as more inclusive and more meaningful conclusions.

7. Investigators using "theory X" could adopt an entirely new method, concept, or definition developed by "theory Y". A new method means new data which, in turn, leads to the inclusion of new variables and to the formulation of new concepts and new problems. (Using a "lie-detector" to check on the responses of administrators to attitudinal items in interviews; using learning-machine programming to detect or teach rational problem solving of/to school administrators.)

How can a person go about comparing two or more theories to discover such complimentarity? Sir Frederick Bartlett has suggested some steps that might be taken:[11]

1. Spotting directional properties through (a) receptor-effector anticipation which treats information of the moment as a cue for an immediate as well as the next immediate response, (b) perceptual anticipation, and (c) using structure and features of structure as rules related to, and perhaps determining, subsequent action.
2. Making use of directional properties to determine relationships to the effective interests of the researcher or analyst and pre-established conventions.
3. Detection of points of agreement -- which are easier to detect than points of difference -- to imply something already established by one theory is applicable to the theory. This can be done by picking out items and groups which display the greatest number of, or most important, points of agreement. These points of agreement are then arranged in a sequence such that each successive step becomes empirically more probable than the preceding step, the criterion of importance tending to overweigh the criterion of number. The points of difference between the two theories being compared that emerge as a result of this approach thus help us keep moving within limits, and help show us where a new direction or move becomes necessary.

In the short time--and the brain power-- allotted to me, it would be impossible to carry out all three of these steps. However, the approach I have chosen does contain some of the elements of the third step suggested by Sir Frederick Bartlett.

For our purpose, two theories have been selected to illustrate some of the ways of looking at theories and the relationships between theories that result in implications or suggestions for research. One theory, the Getzels-Guba nomothetic-idiographic model, is probably better known than the second theory, Stogdill's input-output framework. (This is especially so in light of the excellent discussion of the Getzels-Guba model yesterday.) We shall look at these theories more in terms of content than methodology, in terms of complimentarity rather than of divergence. Through several examples, an attempt will be made to indicate some major concepts basic to each theory and complementary to both theories, the questions or propositions (not hypotheses) generated by each theory, and some questions or propositions raised by a comparison of concepts. Moving from the more familiar to the less familiar, from the complex to the more complex, the approach will be to look at the Getzels-Guba model, followed by a glimpse at the Stogdill framework. This procedure seems compatible with the process suggested by Sir Frederick Bartlett.

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[11] Sir Frederick Bartlett, *Thinking: An Experimental and Social Study* (New York: Basic Books, Inc., 1958), pp. 72-87.

An Assessment of Two Theories of Administration

The concepts or elements that will be used as points of departure, I must confess, are not original with me. They are contained in a paper written by Egon G. Guba in 1958[12] which previews much of the more recent expansions and refinements of the original nomothetic-idiographic model.

The concepts or elements selected correspond to the topics used to describe these two conceptual frameworks in the material presented to you at the beginning of this seminar. They are: (a) behaviors, (b) formal institutional structure, (c) role structure, (d) morale, (e) conflict, (f) effectiveness-efficiency, (g) adjustment-integration, and (h) administration-leadership. This order, you will notice, corresponds to the left-to-right development that is characteristic of the structural arrangement of both frameworks and the topics tend to move from single concepts to relationships between and among concepts.

General Structural Similarities and Differences

First, let us look at some general characteristics of the Getzels-Guba nomothetic-idiographic "model" and of Stogdill's input-output "middle range theory." Getzels and Guba developed a theory of the social system through a hypothetico-deductive analysis of Talcott Parsons' suggestion that the structure of an organization may be analyzed from the point of view of the suborganizations or roles which participate in the functioning of the total organization. They perceived that their social system theory was isomorphic to administration. Thus, their theory is suggested as a model for thinking about and analyzing administration. In Willower's terms, this conceptual development reflects analogical reasoning and polarization.[13]

Stogdill's "middle range theory" was derived from his analysis of previous theories of administration which revealed an overemphasis on certain elements and the ignoring of other elements, especially in regard to group purposes and norms, expectations as an input variable, and group achievement. His framework attempts to relate psychological and sociological approaches to group achievement in an institutional setting. In Willower's terms, this conceptual development reflects tha analysis of empirical generalizations.

Both frameworks are assumed to be open systems, i.e., the organization interacts with the larger environment. Both frameworks assume that the organization is in a dynamic condition of unstable balance and is self-regulating. The basic emphasis of both frameworks is on role expectations which are viewed as stemming simultaneously from the transaction between institutional and individual roots.

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[12] Egon G Guba, Role Personality, and Social Behavior, op. cit.

[13] Donald Willower, "Concept Development and Research," a paper presented at the UCEA Research Seminar, University of North Carolina, April, 1961.

Although Stogdill refers to his framework as a "middle range theory", his conceptual structure seems to have more of the characteristics of a paradigm than of a theory. It suggests a basis for the classification and analysis of present knowledge and research on administration in terms of a systematic terminology. It is one way of looking at the pieces of the mosaic in a systematic way. (A theory is a hypothetical-deductive creation in which every concept is defined in operational terms. The propositions of this deductive system are arranged in an order of levels; those at the top level being those which occur only as conclusions in the system. At the intermediate levels are conclusions of deductions, from higher level premises, that serve in turn as premises for deductions to lower level hypotheses. The empirical testing of the deductive system is effected by testing the lowest level hypotheses of the system.[14])

Behaviors

From the cryptic and somewhat distorted summary of the frameworks of Getzels-Guba and of Stogdill that was distributed to you, it is apparent that there is an overlapping as well as a difference in these two frameworks regarding "behaviors." However, even the casual reader can perceive that the concept used in each framework contributes to a more complete understanding of the corresponding concept of behavior used in the other framework. Stogdill uses the more global or molar concept of behavior whose three component parts (performance, interaction, and expectations) are operationally defined. The Getzels-Guba model, while stressing only the interaction component, emphasizes both the institutional and individual dimensions of this component. Both frameworks place a strong emphasis on the importance of expectations, with Stogdill pointing out that his elaborated concept of expectation (a complex function of drive, estimated probability of occurrence and the estimated desirabilityof occurrenceof an outcome) enables us to account for the direction and continuity of behavior as well as accounting for prediction and value. Both frameworks explicitly and implicitly conceive of behavior as having an institutional as well as an individual base. Both limit behavior to the institutional setting, while at the same time realizing the effect of external events on institutional behaviors.

At least one contribution to research in administration that each framework makes could be stated as follows: Stogdill provides a broad framework or concept of behavior and relates this input variable with other variables and combination of variables (mediating variables, group structure and operations, and group outputs) in the total classification system. The result is a rather tight, coherent conceptual subsystem composed of interpenetrating but somewhat discrete variables. Getzels and Guba provide us with a simple, but equally compact and interrelated framework, that suggests useful dimensions of the variables suggested by Stogdill and which could be used for research purposes. Both frameworks are extremely heuristic regarding the concept of "behaviors."

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[14] Richard Bevan Braithwaite, Scientific Explanation: A Study of the Function of Theory, Probability and Law in Science, (Cambridge, England: Cambridge University Press, 1953), pp. 12-13.

Formal Institutional Structure

If differences occur between the frameworks of Getzels-Guba and Stogdill, they seem to be those of inclusiveness, emphasis, and degree of delineation. Getzels and Guba tend to relate both status and position with role, viewing status as an outgrowth derived from role-expectations which they classify as being on the institutional dimension (having a base more in institutional purposes and related tasks than in individual personality and needs.) Stogdill, by differentiating between--as well as relating--structure and operations, tends to suggest that structure as defined by Getzels and Guba may carry too great a burden. His inclusion of the concepts "authority" and "responsibility" as aspects of role structure, while being more congruent with the Getzels-Guba concept of "role," tends to add an additional meaning to the interplay between formal structure and role structure. This is an excellent example of the need to understand each "theory" within its own structure of concepts. Both frameworks seem to be taking into consideration the same phenomena, but the structure of the conceptual system indicates how these phenomena must be described and "fit into" the structure of the entire conceptual system.

Examples of the "kinds" of propositions generated by one or both of these frameworks are:

* Individuals in higher status positions have a greater degree of freedom than do occupants in lower status positions.

* The survival of an organization requires both the reinforcement of structural integrity and the achievement of tasks.

* The basic process of organizing itself creates a situation that rewards certain group members and at the same time disappoints the expectations of other group members.

* If the formal operations of an organization do not sufficiently structure and fulfill the expectations of the members of the organization, there will result insufficient organizational cohesion, stability, and morale to accomplish institutional purposes.

Role Structure

Both frameworks make a distinction between role and the status and function of a position. Both frameworks reflect the influence of Talcott Parsons in their concept of the status of a position being more "universalistic" while the role of the incumbent of a position tends to be more "particularistic." Stogdill's linking of "status" with "enduring operations, " linking "role" with "changing operational demands," tend to suggest considerations that might possibly be incorporated into the Getzels-Guba model without distorting the structure of the model. The difficulty for Getzels and Guba in attempting to do this would not be deciding if status and enduring operations are implicit in the nomothetic dimension, but in deciding if role (now on the nomothetic dimension) and changing

operational demands could be placed on the nomothetic dimension if these changing demands can originate from individual sources as well as from institutional sources (job definitions, policy shifts, etc.).

Morale

It seems sufficient to say that both frameworks define morale in a rather explicit way that has been lacking in many previous theories. Morale is one of the "most-researched" phenomena and still one of the least understood. Morale in these two conceptual frameworks is conceived as an effect related to expectations, group operations, and individual needs. However, the old problem of macroscopic and microscopic is still unresolved. If morale is conceived as a group (macroscopic) phenomenon, then how can one "measure" it except through obtaining information from individuals (microscopic)? This is a methodological question which is not resolved nor even suggested by either framework.

The propositions generated by these frameworks are of a number sufficient to keep several groups of researchers busy for several years. Some of these propositions include the following:

* **Without group structure there is little or no freedom of action.**

* **Optimum group structure can increase group output, but maximum structuring of group operations tends to affect adversely group output.**
    -- **Increasing the structure of a group tends to increase its freedom of action to a point beyond which further increases in structure result in decreases in freedom of action.**

* **Optimum group structuring becomes increasingly more critical in less stablized situations and during periods of transition or conflict.**

* **Since persons in higher status positions have a relatively large degree of freedom, there is a greater probability that they will achieve an optimum level of morale than will persons in lower status positions.**

* **"Group leadership," which determines group structure and operations, has a direct influence on the level of group morale.**

* **Applications of pressure and persuasion as a means of motivating individuals and groups tend to result in an unacceptable level of morale.**

* **Morale is closely related to group integration and group productivity, but is not identical with these phenomena.**

* A desirable level of morale is dependent upon the presence of the optimum level of all of the following:
  - congruity between institutional values and goals and individual values and goals;
  - probability of the individual meeting his own needs within the organizational structure; and
  - a rational relationship between individual role and institutional goals and policy.

Conflict

Both frameworks define conflict as essentially growing out of differences within or between (a) institutional requirements, role structure, and goals, and (b) personal needs and expectations. It is rather surprising that Getzels-Guba do not include "cognitive dissonance"[15] as one kind of conflict, especially when the concept of rationality is included as an element influencing morale. Other possible sources of conflict implied by either or both frameworks are notable by the absence of their discussion, e.g., the conflict generated by a discrepancy between (a) the expectations a role incumbent attributes other groups regarding his role. (Using the Getzels-Guba and Stogdill frameworks as a base, it is possible to develop a rubic that identifies approximately sixty-four possible "kinds" of conflict.) In these terms, both frameworks are complimentary: they both fail to extend their potentialities for helping understand the nature and complexity of intra-organizational conflict. Yet both frameworks do suggest an adequate number of propositions for even the most ambitious researcher to explore; the role conflict research generated by the Getzels-Guba model offering sufficient evidence of its heuristic nature.

Effectiveness-Efficiency

Both frameworks point out the importance of separating the institutional (purpose) and individual (needs) elements when discussing organizational outcomes or achievement. They suggest that a single measure of outcome is insufficient to discover what actually obtains from organizational operations. They underline the fact that multiple effects may obtain from a single act. They also suggest that the imporance that is attached to (a) institutional outcomes (goal achievement or productivity) and (b) the meeting of individual and group needs, may tend to shift from time to time and from one kind of task to another. The frameworks point out a need for more intensive and longitudinal studies that obtain a variety of measures of organizational outcomes regarding a variety of tasks under a variety of conditions. Such intensive studies in carefully selected organizations have yet to be undertaken.

Examples of propositions that may be derived from these frameworks are those generated by the Getzels-Guba model regarding the knotty problem of selecting capable administrators:

* Since effectiveness is germane only at the institutional level and not at the individual level, tests of personality are poor predictors of an individual's institutional effectiveness.

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[15] Leon Festinger, A Theory of Cognitive Dissonance (White Plains, N.Y.: Row, Peterson, and Company, 1957).

- Efficiency can be measured only in terms of the particular needs structure of the individual concerned who, himself, may not be conscious of or able to express his need structure.

- Institutional effectiveness can be measured only in a specific situation and in regard to specific tasks at specified times under specified conditions.

Adjustment-Integration

Although the specific terminology differs in these two frameworks and the referents used vary slightly, they seem to produce overlapping if not identical conclusions. The dilemma of macroscopic and microscopic elements (discussed previously under "morale") appears to be a major question raised by an examination of these two frameworks. For example, is there such a thing as group integration without individual integration? Stogdill, using his set of terms, seems to say "yes" and the Getzels-Guba model seems to say both "no" and "yes." Can evidence of group integration be obtained in a manner that does not require that such information be obtained from individuals? Stogdill, as he defines integration, seems to imply "yes" while the Getzels-Guba model indicates a "no" response. While each framework addresses itself to the term "integration", each framework conceives of and uses the term differently. Another example of the "jumble and tyranny" of words. The frameworks thus pose a most difficult problem for research technicians and experts in research methodology--as well as for the theory builders--to puzzle over and play with for the next dozen years.

A few propositions suggested by the Getzels - Guba framework include the following:

- Most role incumbents seek a compromise between conforming to institutional expectations and conforming to individual needs.
  - This implies that the "transactional" dimension represents a natural condition. Deviation from this "norm" by individuals and organizations could be used to describe the profile of an institution.

- If the degree of congruence between expectations and needs is small, over-adjustment (over-socialization) to the role results in personality problems that may be of a rather severe nature, e.g., the person may reject those portions of his personality which are least consistent with institutionalized role expectations and result in malintegration or a psychoneurotic condition. (One cannot help but note the possibility that this problem may account for the growing popularity of various philosophies, such as Zen, that were previously not perceived as appropriate for Western civilization.)

- If the degree of congruence between expectations and needs is small, over-integration (over-personalization) to the role may result in a role incumbent becoming "socially delinquent" or an institutional deviant or trouble-maker.

* Since social demands are generally seen as more imperative than individual ones (at least within the institution), socialization usually takes precedence--in terms of order and quantity--over personalization in meeting perceived incongruity between expectations and needs.

Administration - Leadership

The structure of each framework creates difficulty in identifying their complimentary concerning these variables or concepts. In addition, Stogdill uses the term "leadership" in a very broad, non-explicit sense. Both frameworks move from the common emphasis on the power of a status position to a more contextual, interaction concept. Each framework, while recognizing hierarchical arrangements and differentiations, views role-expectations as the major factor related to the ability of a role incumbent to influence others. Both frameworks suggest that administration, regardless of the particular style of behavior used or the task involved, is oriented to the achievement of existing institutional goals and must be primarily nomothetic in nature and emphasis.

The policy-process split suggested by Guba as differentiating administration from leadership can create misunderstanding on the part of the careless reader. In essence, both Stogdill and the Getzels-Guba model view administration as being concerned primarily with the implementation of policy "as it is," while leadership is seen as being concerned with the process of examining and improving present or existing goals. The difference is basically one of the purpose of the role incumbent, not his style of behavior or the position he might hold. For example, the administrator's concern for staff development is primarily that of improving the competencies of staff members so they might accomplish existing goals more effectively and efficiently. The leader's concern for staff development might be to alter goals as the purpose of the institution come to take on new meaning to these now more competent staff members. In a slightly different set of terms, both frameworks suggest that administration is primarily "present-oriented" and thus is concerned with the perfection of means or operations that are directed toward present goals. Leadership, in these terms, tends to be more "present-future oriented" and thus is concerned more with processes of change for redefining directions and operations.

These two frameworks indicate that the results of the DCS project, which show that elementary school principals do not exhibit "leadership behavior" as this concept is usually defined by theories such as those of Hemphill (his "consideration" dimension of administration, for example), should come as no surprise. These frameworks suggest that Halpin's emphasis upon the "group maintenance" or "task accomplishment" function of administration should be given cognizance in future research.

Some Questions Generated by the Assessment

These miscellaneous descriptions and comments illustrate only one of the ways that might be used in making an assessment of two or more theories of administration. Admittedly, these are incomplete, somewhat inane, and rather distorted illustrations. They do not raise the question about the applicability of these two general frameworks regarding organizational behavior to educational institutions. However, I hope that this exercise does suggest some of the advantages--as well as the difficulties and dangers--of attempting to seek out some complimentarity of two or more theories for purposes of research. In addition to providing a better understanding of each theory, such an examination can also produce a chain of questions of a different kind and level than often results from the examination of only one theory of administration.

Some examples of questions deriving from a look at the conceptual frameworks of both theories are:

1. Are expectations an individual or group (idiographic) input variable as suggested by Stogdill, or are they an institutional (nomothetic) input or mediating variable as suggested by the Getzels-Guba model?

2. Is the status of both an administrator and a lead[illegible] defined by (or derived from) institutional prescription, or by performance and interaction?

3. Is the style of administration (nomothetic, idiographic, transactional) defined in terms of the concepts and values held by the subject regarding his own role, or is it defined in terms of the expectations held by the subject regarding the role of others (the object of the expectations) and regarding the institutional task concerned?

4. Is "transactional behavior" defined in terms of average performance, interaction, and/or expectations; or is it defined in terms of the value given consistently to specified norms and sanctions by a given group or role incumbent; or is it defined in terms of a particular pattern of consistent performance, interaction, and expectations?

5. What effects on productivity, morale, and integration result from role-conflict, personality-conflict, and role-personality conflict within and between alter-groups and referent-groups? Are these effects greater or less than similar conflicts between and administrator and these groups?

6. What differences really exist between:

   a. Stogdill's "integration" and "morale" and the Getzels-Guba "belongingness" and "identification?"
   b. Stogdill's "productivity" and the Getzels-Guba "rationality?"

7. What outputs other than "rationality," "identification," and "belongingness" are conceived as relating to the goals of the Getzels-Guba model? Are these three variables seen as mediating or output variables?

8. Is the "degree of freedom" concept as described in both frameworks sufficient to describe the difference between two positions on different levels of the hierarchy? How is this concept, "degree of freedom", related to the administrator-leader dilemma?

In regard to this last question, the two frameworks examined seem to suggest the following propositions:

Major Proposition:

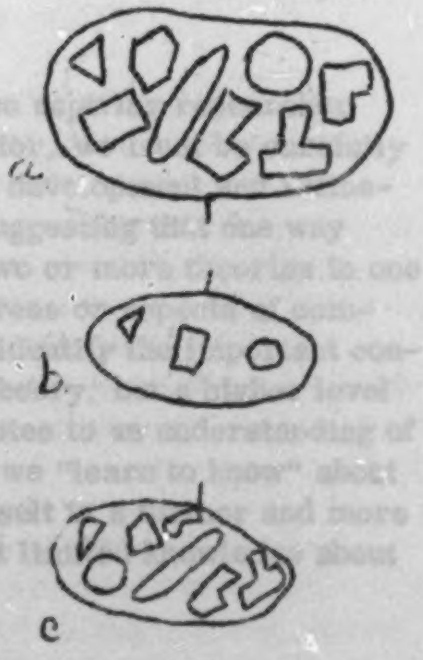
The degree of freedom of a role incumbent is a function of the inverse relationship between (a) the clarity of the size or range of the field of behavior that is defined as legitimate, and (b) the number of considerations that sanctions and expectations indicate the role incumbent should take into consideration in the decision-making process.

Minor Propositions:

a. The higher the status and the clearer and greater the range of legitimate behavior, but the greater the number of considerations--the greater the difficulty a role incumbent has in exercising freedom of independence in decision-making. (A definition of the administrator?)

b. The lower the status and the smaller the range of clearly defined legitimate behavior, but the fewer the considerations--the easier it is to exercise limited freedom of independence in decision-making. (A definition of a leader on lower levels of the hierarchy?)

c. The lower the status and the less the clarity and range of legitimate behavior, but the greater the considerations--the greater the difficulty in exercising freedom of independence in decision-making. (This seems to define the problem of school teachers and university faculty members as described by Ross Mooney in his paper.)



a + b Establishes a condition suitable for change by combining administration and leadership on differentiated levels of the hierarchy.

a + c Describes a condition that lacks potential for change since only administration is possible under delimited conditions and when conflict is present. (This seems to describe educational institutions.)

Concluding Remarks

In this paper we have looked at the problem of assessing theories of administration, some ways in which a theory or theories may be assessed, and we have looked at some selected characteristics of two conceptual frameworks of administration as an illustration of how the complimentarity of two or more theories may be perceived. Crude as this presentation has been, it underlines the need to understand the structure of a theory of administration in a context larger than the framework of a single theory, no matter how "complete" or "good" that theory may be.

As a departing thought, let me quote from Sir Frederick Bartlett:[16]

> Sir Henry Head used to say that there are two sorts of young scientists. One can be led into what seems like a forest, and left alone. He will find for himself a path and follow it, though not without winding; and after a while he will get himself out on to a broad highway. The other can be set upon a well-marked track, and left alone, and he will pursue some by-path and go on and on and eventually he will end "up a tree."

Today with the numerous theories currently available to the aspiring researcher concerning organizational achievement and administrative behavior, we must be carefully that we do not end "up a tree" in our attempts to promote theory development and refinement as well as research in educational administration. I am suggesting that one way that might help prevent such an unfortunate result is to assess two or more theories in one or more of the ways suggested as a means of identifying some areas or aspects of complimentarity of these theories. Not only will we then be able to identify the important concepts and questions that need to be investigated regarding each theory, but a higher level of question for research purposes may be identified that contributes to an understanding of both conceptual frameworks. We may even perceive better how we "learn to know" about educational administration. Such efforts and outcomes might result in a further and more rapid nibbling away by research at the perimeters of our present limited knowledge about educational adminisration.

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[16] Sir Frederick Bartlett, Thinking, op cit., p. 151.

Background Materials on the Getzels-Guba and Stogdill Theories-- An Addendum

Background Materials on the Getzels-Guba and Stogdill Theories -- An Addendum

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The paper that will be presented at one of the sessions of the UCEA Research Seminar attempts to suggest some ways for assessing theories of administration for purposes of research. Two theories will be used to illustrate some problems and processes of such assessment. These theories are (a) the "input-output" framework of Ralph M. Stogdill, and (b) the "nomothetic-idiographic" model of Jacob W. Getzels and Egon Guba.

The following material presents some of the major characteristics and elements of each of these two theories. Some understanding of this material will be assumed when the paper, "An Assessment of Selected Theories of Administration, " is presented.

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STOGDILL'S THEORY OF ORGANIZATION ACHIEVEMENT [1]

This theory is, in Stogdill's words, a "middle range theory." It does not deal with small subsets of problems nor does it depend on a large theoretical system. Excluding the larger environment within which all groups operate, the theory deals only with what happens within the organization. The major orientation is that of social psychology. In Stogdill's words: "It is a segment of theory that exists on the boundaries between psychology and sociology. It is sociological in that it attempts to explain how member roles emerge in the social group. It is psychological in that it seeks to explain respects in which the behavior of the members exerts effects upon the group. It represents a study in social psychology in that it attempts to relate and integrate the two approaches." (Preface, v-vi)

Major Assumptions -- The two major assumptions upon which the theory is based are: (a) "the structure and operations of a group can be described in terms of the behaviors of its members in interaction," and (b) "the different aspects of group achievement represent transformations of member behavior into forms of value which differ from the input behaviors of the individuals who comprise the membership of the group." (Preface, v)

Additional assumptions include the following:

1. A social group can be described (at least in part) in terms of the performances, interactions, and expectations of its members; each of these three complex aspects of behavior being exclusive of the others.

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[1] Ralph M. Stogdill, Individual Behavior and Group Achievement. New York: Oxford University Press, 1959. Hereafter in this section, the pages in parentheses refer to pages in this publication.

2. A social order exists whose nature influences to some extent the behavior of individuals plus the kinds of groups that are formed in a given culture.
3. Human beings act, sense, perceive, feel, and learn and these experiences help influence their behavior in relation to other persons.
4. The nature of a group is determined by the kinds of people who make up the group as well as by the larger social environment of which the group is a part.

General Purposes -- The theory proposed by Stogdill is an attempt to correct some of the deficiencies of other previous theories of administration. He suggests that a theory of groups that is developed only on the basis of interaction does not include factors such as group purpose, norms, and integration. Theories that depend only on concepts of role and status can explain group structure better than group function, operation, and achievement. When interaction is equated with performance, interaction must carry a greater burden than it is capable of doing. Stogdill suggests that neither interaction nor performance can account for the development of group purposes and group norms.

A major weakness of theories of group organization is their inability to account for the findings on group achievement. For example, satisfaction and enthusiastic effort appear to be unrelated in many situations. Another weakness is that little research has been done using the concept of the role system as a structure of mutual expectations, especially using one concept of expectation as an input variable.

Intentionally Stogdill has proposed a theory that discloses a multitude of problems that will take a number of years of research to explore and test. His stated intent is to suggest a more systematic and effective manner for acquiring new knowledge about organization achievement. He does not attempt to answer questions, but his theory is developed so as to challenge a continual search for knowledge.

The Structure of the Theory -- Stogdill regards an organized group as an input-output system that is an open system (i.e., exchanges members and values with its environment) in unstable balance. Absolute input-output equality is not assumed, but a high degree of equivalence is assumed since in order to increase output above a standard level some increase in input energy or values appears to be necessary. The structure of his theoretical system is diagrammed by Stogdill in the following manner: (p. 13)

MEMBER INPUTS	MEDIATING VARIABLES		GROUP OUTPUTS
Behaviors	**Formal Structure**	**Role Structure**	**Achievement**
Performances	Function	Responsibility	Productivity
Interactions	Status	Authority	Morale
Expectations	(Purpose, Norms)	(Operations)	Integration
GROUP STRUCTURE AND OPERATIONS			EFFECTS

Risking the danger of oversimplification, the structure of the theory may be summarized briefly. Performances and expectations, two of the input variables, are aspects of individual behavior. The third input variable, interactions, concerns interpersonal behavior. Stogdill assumes that these three aspects of member behavior are sufficient to generate a theory of organization achievement.

The effects of these three input behavior variables in combination are evidenced in the form of role differentiation and role performance, or in group structure and operations. The interrelated performances, interactions, and expectations of group members tend to result in role structure and group operations. Group achievement, the end effect of these interpersonal and personal behaviors, is mediated through group structure and operations. The different aspects of group achievement are productivity, morale, and integration.

Schematically, the primary direction of effects between the four sets of variables (behaviors, formal structure, role structure, and achievement) is from left to right. However, the variables in each of these four segments interact and exert forward and backward movement effects upon the variables in each of the other segments. The mediating variables (formal structure and role structure) are conceived as the structuring and patterning of member input variables which result in group outputs.

Some Definitions -- In order to understand Stogdill's theory, it is necessary to perceive some terms as he defines them. This process of defining terms operationally "puts some flesh on the skeleton" of the theoretical structure.

1. Behaviors

   a. Interaction -- An "action-reaction sequence in which the reactions of each participant in the sequence are responses to actions initiated by other participants." "In a system composed of two members, A reacts to B, and B reacts to A in such a manner that the responses of each is a reaction to the behavior of the other." (pp. 274 and 18 respectively)

   b. Performance -- "A response which may be identified as one of the actions or reactions that constitute the operations of an interaction system." (pp. 40-41)

   c. Expectation -- A readiness for reinforcement. "It is regarded. . . . as a function of drive, the estimated level of desirability of a possible outcome, and the estimated probability of the outcome." (p. 275)
   (Estimated probability of occurrence of an outcome — "An individual's prediction, judgment, or guess relative to the likelihood that a given event will occur." (p. 63)
   (Estimated desirability of an outcome -- "An individual's judgment relative to the satisfying of, need for, demand for, appropriateness of, or pleasantness or unpleasantness of, a possible outcome." (p. 63)

2. Formal structure

a. Function of a position -- This "defines the general nature of the contribution that its occupant is expected to make toward the accomplishment of the group purpose." (p. 123)

b. Status of a position -- "The degree of freedom granted its occupant in initiating and maintaining the goal direction and structure of the system in which the position is located. The status of a position is defined in relation to the status and function of all other positions in the system." (p. 123) (Note that "degree of freedom" is used rather than "power", a term which is intentionally absent from Stogdill's terms.)

c. Group purpose --"...a set of mutually confirmed desirability estimates relative to valued outcomes that may be experienced as a result of group structure and operations." (p. 124)

d. Group norms -- "The norms of a group tend to induce conformity in belief and conduct as well as in performance when they are perceived to be related to the purpose and operations of the group....The goals, norms, rules, traditions, and rituals of the group represent...mutually reinforced sets of expectations. These are characteristics of groups not individuals....Goals and norms are to the group as value systems are to the individual. They represent sets of values in terms of which alternative outcomes are evaluated and the norms or purposes of other groups are compared." (p. 78)

e. Formal organization -- This is the stability and legitimacy of the system of positions members have structured, mutually acknowledged, and accepted. "Formal organization implies (1) acknowledgement and confirmation of the suitability, legitimacy, and stability of the structure of positions, and (2) acknowledgement of the mutual obligations among the positions relative to the form and manner of initiative and response to initiative in interaction." It is "usually conceived as a set of expectations which is defined by the group on the basis of rational considerations." (pp. 124 and 147 respectively.)

3. Role Structure

a. The Role System -- "...a set of expectations arrived at through the mutual interaction of the members." "A member's role defines the responsibility and authority he is expected to exercise by virtue of the functions and status of his position, the demands made upon him by changing group operations, and the kind of person he is perceived to be." (pp. 147 and 276-77 respectively)

b. Responsibility -- "...the specific set or range of performances that a member is expected to exhibit by virtue of the operational demands made upon his position in a formally acknowledged structure." (p. 129)

c. Authority -- Organizational authority is "the degree of freedom that the occupant of a position is expected to exercise in initiating performance and interaction within a formally acknowledged structure." (p. 129)

d. Operations -- "...all the actions and interactions which maintain the structure and accomplish the purpose of a group.... Both individual and interpersonal performances are involved in group operations." (p. 41)

4. Achievement

a. Group achievement -- "...the totality of the outcomes it experiences as a result of the interrelated performances, interactions, and expectations of its members." (p. 196)

b. Group productivity -- "...the degree of change in expectancy values created by the group operations." (p. 198) "The productivity values might be regarded as the satisfaction derived from participation in the activities of the group." (p. 200) "Productivity refers to those outcomes designed to satisfy the expectations of the group as a whole. This is, productivity measures the values created by the members for the group... While productivity is achieved at a cost to the members, the satisfaction of the individual values of the members represents a cost to the group." (pp. 202-03)

c. Group morale -- It may be regarded as "the degree of freedom from restraint exhibited by a group in operating upon a goal objective." (p. 198) "Motivation is regarded in the present theory as a function of drive and confirmed desirability estimates... An individual or a group may be highly motivated but unable to act. Given freedom to act, the degree of morale may be highly related to the strength of motivation. There is a sense in which morale may be regarded as motivation exhibited in overt action toward a goal objective. Motivation provides potential for morale." (p. 213)

d. Group integration -- "...the extent to which structure and operations are capable of being maintained under stress." (p. 198) "In general, it may be concluded that the identity of individual and group goals, member satisfaction with the group and with his role in it, a feeling of acceptance, mutual liking among the members, satisfaction of member expectations, member support of the group leadership, and subgroup support of the group goals are all measures of various aspects of group integration. These factors, built into a stable and clearly differentiated role structure which enables the members to know what they are expected to do and with whom they are expected to coordinate their efforts in times of crisis or emergency, contribute to the integration and survival of the group under stress." (p. 218)

5. Role Conflict

a. Nature of conflict -- "As a member of a subgroup, a member may find that he has acquired a role that differs somewhat from his role as defined by the larger group... A member may also define his role in terms of personal values and preconceptions which have little reference to the purposes or norm structure of the group." (p. 140) "Role conflict occurs when contradictory expectations are made upon the occupant of a position." (p. 277)

b. Conditions leading to role conflict -- "At least two conditions operate to create role confusion and role conflict. First, roles are not always clearly defined. Second, various persons and subgroups may entertain different expectations relative to the same role..."Role confusion and conflict, then, grow out of the lack of clarity in role definition, differences in the perception of a role by self and others, and differences in the expectations and demands made upon a role by various persons and subgroups in the system." (p. 140)

6. Organizational subsystems

"A number of systems interact to describe the structure and operations of a large organized group. Among the systems which can be clearly differentiated are the following:

"1. The structure of positions which is given formal definition and sanction by the differentiation of function and status.

"2. The operative role system which is defined by the different degrees of responsibility, authority, and delegation exhibited by the occupants of various positions.

"3. The formal interaction system which tends to parallel the formal structure of positions but is subject to deviation in response to changing demands for coordination of individual performance and subgroup operations.

"4. The norm system of the group and of its subgroups which, through sanction and prescription, defines acceptable conduct for group members.

"5. The system of member performances which describes the operations of the group and changes in response to variations in the group task.

"6. The system of informal interactions which brings together group members on the basis of propinquity, mutual liking, and similarity of interests.

"7. The system of covert interactions, if present, which brings together persons who challenge the legitimacy of the operative role structure and differential sanctions associated with it." (pp. 147-48)

THE GETZELS AND GUBA MODEL OF SOCIAL BEHAVIOR

This model has gone through various stages of development since its first inception and use. The model was derived from a hypothetico-deductive approach stemming from the suggestion of Talcott Parsons that the structure of an organization may be analyzed from the point of view of the suborganizations or roles which participate in the functioning of the total organization. The dimensions or categories of the model are proposed as a convenient and useful way of regarding reality and coping with it. As such, the model is seen as--and has been used rather extensively as--a tool of research.

(Use is made in this brief summary of only four of the many references that discuss various aspects or applications of the model. For convenience and brevity, these four references are listed at the end of this section and notation will be indicated by using the number of each reference.)

The model conceives the social system as composed of two classes of phenomena which simultaneously are independent conceptually as well as phenomenally interactive. (2, p. 65) The first class of phenomena are the institutions made up of expectations and roles aimed at meeting the goals of the system. The second class of phenomena are the individuals, each having certain personalities and need-dispositions, and whose interactions make up group behavior. Thus, the first class of phenomena reflects a sociological analysis aimed at understanding group behavior in terms of the normative dimension of activity, namely, the elements of institution, role, and expectation. This dimension is referred to as nomothetic. The second class of phenomena reflects a psychological analysis aimed at understanding group behavior in terms of the personal dimension of activity, namely, the elements of individual, personality, and need-disposition. This dimension is referred to as idiographic.

Some Major Assumptions and Definitions -- The theory conceives of administration structurally as a hierarchy of subordinate-superordinate relationships within a social system, and functionally as a hierarchy of relationships that serves as the locus for allocating and coordinating roles and facilities.

The major characteristics of the model may be described as follows:

A. The Institutional Dimension (Nomothetic)

1. "All social systems have certain imperative functions that are to be carried out in certain established ways. Such functions as governing, educating, or policing within a state may be said to have become 'institutionalized', and the agencies carrying out these institutionalized functions for the social system may be termed "institutions." (2, p. 66)

a. Institutional functions are carried out by human agents. (4, p. 7)
b. Institutions share the common values of the larger society of which they are a part. (4. p.7)
c. Institutions are structural since in order to carry out a specific purpose or function requires an organization, and organization implies component parts and some rules about how these parts should be meshed or engaged. (4, p.7)

2. "The most important analytic unit of the institution is the role. Roles are the 'dynamic aspects' of the positions, offices, and statuses within an institution, and they define the behavior of the role incumbents or actors." (2, p. 66)

3. "Roles are defined in terms of role-expectations. A role has certain privileges, obligations, responsibilities, and powers. When the role incumbent puts these obligations and responsibilities into effect, he is said to be performing his role. The expectations define for the actor what he should or should not do so long as he is the incumbent of the particular role." (2, p. 66) In this sense, role expectations tend to be externally defined. (2, p. 71)

   a. Institutions are normative since tasks are organized into roles. These roles serve as 'norms' for the behavior of the role incumbent. (4, p.8)
   b. Institutions are sanction-bearing since they use positive and negative sanctions to insure compliance with norms. (4, p. 8)

4. "Roles are complimentary. They are interdependent in that each role derives its meaning from the other related roles. In a sense, a role is a prescription not only for the given role-incumbent but also for the incumbents of other roles within the institutions and for related roles outside the institutions....It is this quality of complementarity which fuses two or more roles into a coherent, interactive unit and which makes it possible for us to conceive of an institution (or group) as having a characteristic structure." (2, p. 66)

   a. "Indeed, the expectations for one role may to some extent form the sanctions for the expectations of a second interlocking role. For example, the role of sergeant and the role of private in the army cannot really be defined or implemented except in relation to each other. This quality of complimentariness fuses two or more roles into a coherent, interactive unit and makes it possible for us to conceive of an institution as having a characteristic structure." (4, p.10)

Up to this point the model tends to conceive of the incumbents occupying the roles only as actors, "devoid of personalities or other personal qualities. But in a real situation this is patently not the case. The roles are occupied by flesh-and-blood individuals who are possessed of unique personal qualities and interests which may not be entirely consistent with institutional role expectations." (4, p. 10) In this sense, personality-dispositions tend to be internally defined. (2, p. 71)

B. The Individual Dimension (Idiographic)

1. Personality -- "...the dynamic organization within the individual of those need-dispositions that govern his unique reactions to the environment, and we we might add, in the present model, to the expectations in the environment." (2, p. 68)

2. "The central analytic elements of personality are the need-dispositions, which we can define with Parsons and Shils as 'individual tendencies to orient and act with respect to objects in certain manners and to expect certain consequences from these actions.'" (2, p. 68)

C. Interrelationship of the Dimensions

Both dimensions, the institution and the individual, interpenetrate. In order "to understand the behavior and interaction of specific role-incumbents in an institution, we must know the role-expectations and need dispositions. Indeed, needs and expectations may both be thought of as motives for behavior, the one deriving from personalistic sets and propensities, the other from institutional obligations and requirements." (2, p. 69)

And further: "A given act is conceived as deriving simultaneously from both the nomothetic and idiographic dimensions. That is to say, social behavior results as the individual attempts to cope with an environment composed of patterns of expectations for his behavior in ways consistent with his own independent pattern of needs. Thus, we may write the general equation $B = f(R \times P)$, where B is observed behavior, R is a given institutional role defined by the expectations attaching to it, and P is the personality of the particular role incumbent defined by his need-dispositions." (2, p. 69)

For any given behavior a particular role incumbent may display a greater emphasis on a nomothetic orientation than on an idiographic dimension. Or, in other words, a role incumbent's behavior may be described along a continuum ranging from primary emphasis on role-relevant performance (nomothetic) to primary emphasis on personality-relevant performance (idiographic).

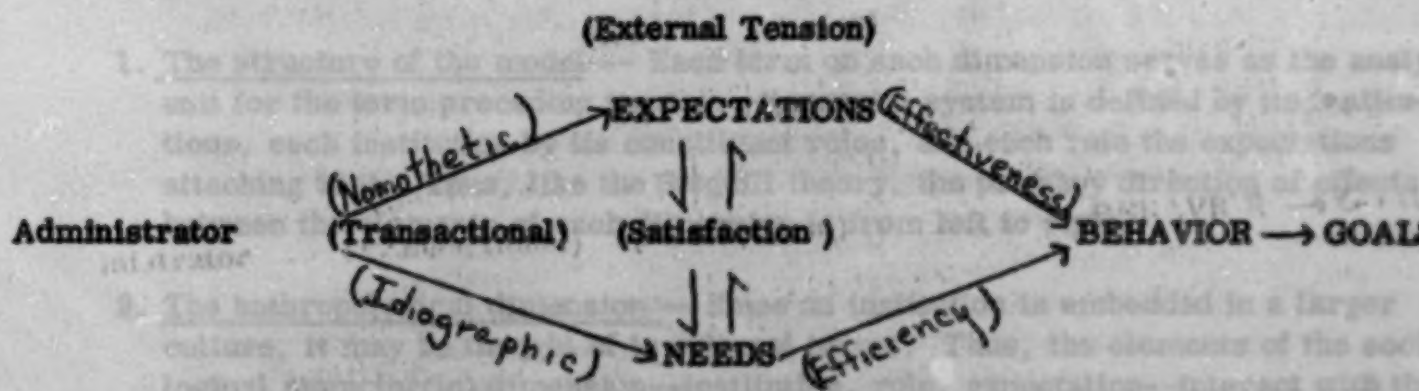
D. The Transactional Dimension

The model also introduces an intermediate dimension or style of behavior as a way of describing behavior which "blends" both nomothetic and idiographic dimensions. This intermediate dimension is termed transactional (group, climate, intentions).

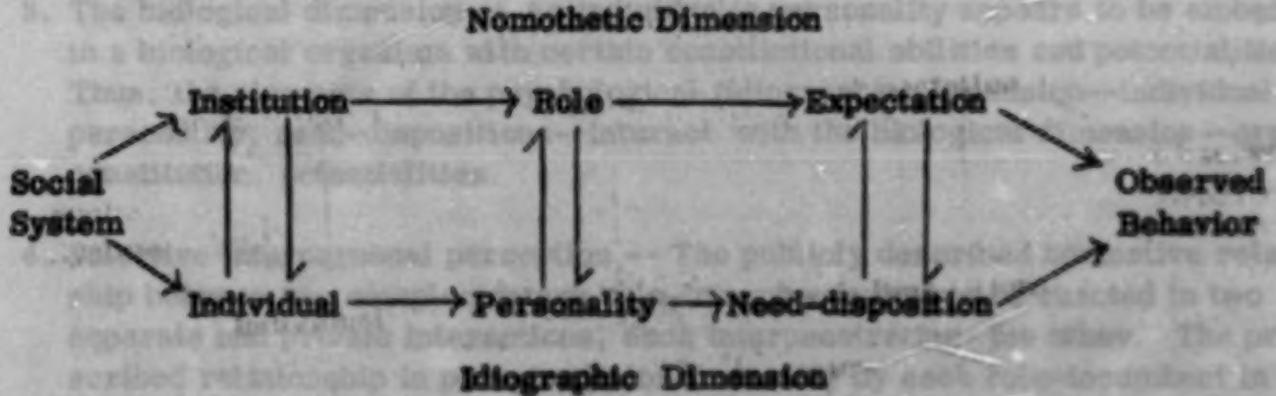
"What we are calling the transactional mode is not just a compromise. Instead, the aim throughout is to acquire a thorough awareness of the limits and resources of both individual and institution within which the process may occur (that is, from the nomothetic and to the idiographic extremes) and to make an intelligent application of the two as a particular problem may demand. In the equation B = f (RxP), R and P are maximized or minimized as the situation requires...The standard of behavior is both individual integration and institutional adjustment. In short, both the socialization of personality and the personalization of roles is taken into account, and the processes...may be seen as a dynamic transaction between roles and personalities". (2, pp. 78-79) Transactional, in these terms, might be referred to as "situation-oriented" rather than "institution-oriented" (nomothetic) or "personality-oriented" (idiographic).

The Structure of the Model--Now that the basic dimensions of the model have been introduced, a graphic presentation of the model may serve to result in further understanding. For the additional purpose of illustrating how a theory develops, the various stages in the development of the Getzels-Guba model are shown.

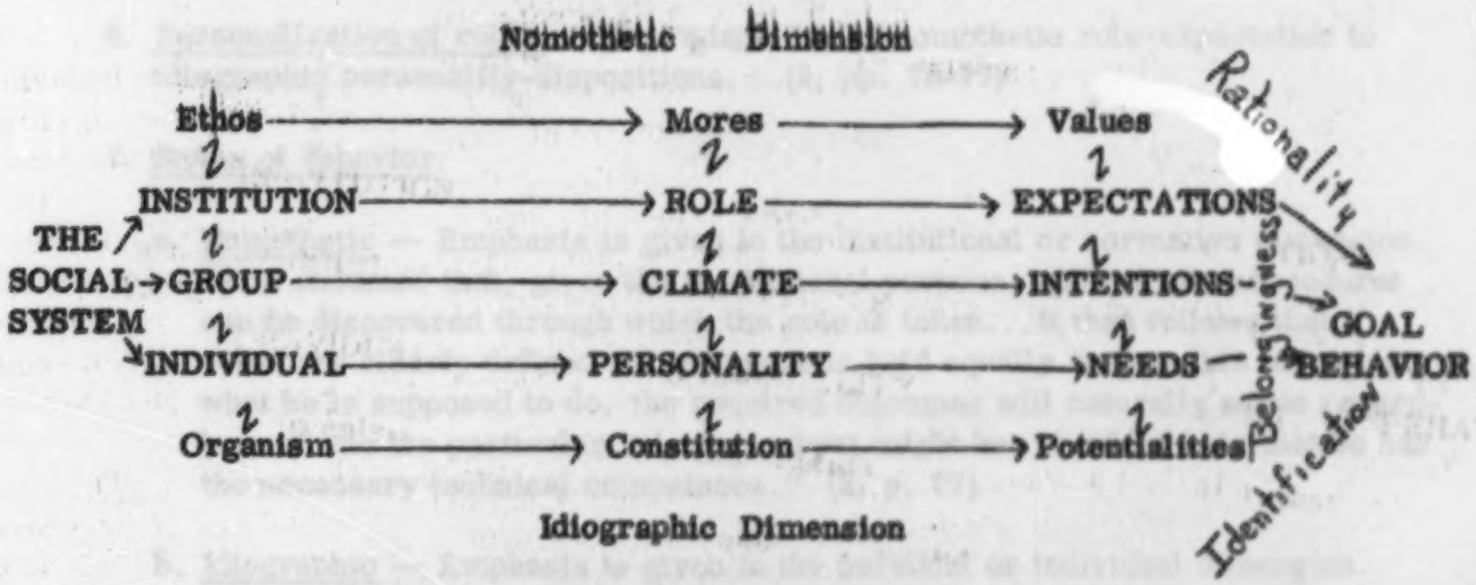
1. The "Early" Model (3, p. 5) (1956-57)


(External Tension)
EXPECTATIONS
(Nomothetic)
(Effectiveness)
Administrator
(Transactional)
(Satisfaction)
BEHAVIOR → GOALS
(Idiographic)
NEEDS
(Efficiency)

2. The General Model (1, p. 156) (1958-59)


Nomothetic Dimension
Institution
Role
Expectation
Social System
Observed Behavior
Individual
Personality
Need-disposition
Idiographic Dimension

3. Recent Expansion (2, p. 80) (1960-61)


Nomothetic Dimension
Ethos
Mores
Values
INSTITUTION
ROLE
EXPECTATIONS
THE
SOCIAL
SYSTEM
GROUP
CLIMATE
INTENTIONS
INDIVIDUAL
PERSONALITY
NEEDS
GOAL
BEHAVIOR
Organism
Constitution
Potentialities
Idiographic Dimension
Rationality
Belongingness
Identification

Further Description of Conceptual Framework--Several additional concepts are necessary to understand the nomothetic-idiographic model.

1. **The structure of the model -- Each term on each dimension serves as the analytic unit for the term preceding it, e.g., the social system is defined by its institutions, each institution by its constituent roles, and each role the expectations attaching to it. Thus, like the Stogdill theory, the primary direction of effects between the elements of each dimension is from left to right.**

2. **The anthropological dimension -- Since an institution is embedded in a larger culture, it may be thought of in cultural terms. Thus, the elements of the sociological (nomothetic) dimension--institution, role, expectation--interact with the anthropological dimension--ethos, mores, values.**

3. **The biological dimension -- An individual's personality appears to be embedded in a biological organism with certain constitutional abilities and potentialities. Thus, the elements of the psychological (idiographic) dimension--individual, personality, need-dispositions--interact with the biological dimension--organism, constitution, potentialities.**

4. **Selective interpersonal perception -- The publicly described normative relationship between two complementary role-incumbents tend to be enacted in two separate and private interactions, each interpenetrating the other. The prescribed relationship is perceived simultaneously by each role-incumbent in an idiosyncratic manner in terms of his needs, dispositions, and goals. "These private situations are related through those aspects of the existential public objects, symbols, values, and expectations, which have to some extent a counterpart in the perceptions of both individuals." (2, p. 71)**

5. Socialization of personality -- The "adaptation of idiographic personality dispositions to nomothetic role-expectations." (2, p. 76)

6. Personalization of roles -- The "adaptation of nomothetic role-expectation to idiographic personality-dispositions.' (2, pp. 76-77)

7. Styles of behavior:

   a. Nomothetic -- Emphasis is given to the institutional or normative dimension. "it is assumed that, given the institutional purpose, appropriate procedures can be discovered through which the role is taken...It then follows that if roles are clearly defined and everyone is held equally responsible for doing what he is supposed to do, the required outcomes will naturally ensue regardless of who the particular role-incumbent might be, provided only that he has the necessary technical competence." (2, p. 77)

   b. Idiographic -- Emphasis is given to the personal or individual dimension. "This does not mean that the idiographic style is any less goal-oriented than is the nomothetic style; it means that the most expeditious route to the ultimate goal is seen as residing in the people involved rather than in the nature of the institutional structure. The basic assumption is that the greatest accomplishment will occur not from enforcing adherence to rigorously defined roles, but from making it possible for each person to seek what is most relevant and meaningful to him...Normative prescriptions of the sort included in typical role-expectations are seen as unnecessarily restrictive and as a hindrance rather than a guide to productive behavior." (2, pp. 77-78)

   c. Transactional -- "Institutional roles are developed independently of the role-incumbents, but they are adapted to the personalities of the actual individual incumbents. Expectations are defined as sharply as they can be but not so sharply that they prohibit appropriate behavior in terms of need-dispositions... The standard of behavior is both individual integration and institutional adjustment...Account is taken of the common or deviant perceptions of existential objects and roles, and of explicit or implicit agreements on how to deal with conflicts and deviant perceptions. In this sense, the group qua group is of crucial significance...On the one hand, it can support the institution by imposing, if necessary, certain normative role-expectations on the group members; on the other hand, it can support the individual in expressing, if necessary, certain idiosyncratic personality-dispositions." (2, p. 79)

8. Belongingness -- The degree of adaptability of a group in moving between the idiographic and nomothetic extremes, and the flexibility of the group in doing this, is dependent upon the degree of belongingness that individuals feel within the given group. A relationship is seen between institutional goals and individual needs. "They 'know' what to expect, what to give, what to take...The boundaries between the private world and the public world become permeable, and the overlap in the perception of a given situation...is enlarged. There is, at once, both greater autonomy and heteronomy for the individual." (2, pp. 79-80)

9. Rationality -- The individual members of the group feel that the expectations held for him are rational if the goals of the institution are to be achieved.

10. Identification -- The individual member of the group sees the accomplishment of the goals of the institution as part of his own needs.

11. Types of conflict: (2, pp. 73-76)

    a. Conflict between the cultural values of the larger environment and institutional expectations.

    b. Conflict between the pattern of expectations attached to a given role and the pattern of need-dispositions of the particular incumbent of that role.

    c. Role conflict -- when a particular role incumbent is required to conform simultaneously to a number of expectations which are mutually exclusive, contradictory, and/or inconsistent so that it is virtually impossible to meet one set of requirements and at the same time adjust to another set of requirements.

        (1) Disagreement among the members of the same referent group in defining the role.
        (2) Disagreement among several referent groups, each having a legitimate right to define expectations, for the same role.
        (3) Contradictions in the expectations of two or more roles which the occupant of a given position is occupying at the same time (e.g., superintendent (superior), colleague, parent, local taxpayer, executive officer of the school board, spokesman for the profession, members of the local school system.)

    d. Personality conflict -- The presence of opposing and contradictory needs and dispositions within the personality of a given role incumbent possibly due to unresolved discrepancies between needs, goals, and potentialities.

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ADMINISTRATORS OR ADMINISTRATION?

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My task is to look at concepts for viewing administrative behavior with particular reference to the self concept. And I would like to approach this job by looking at two contrasting points of view. Following this I will make a tentative suggestion that these viewpoints may supplement rather than oppose each other.

The first of these views which I will give brief attention to is concerned with the task of administration which is usually approached by studying behavior or the administrative process. I will label this point of view "Administration." The second point of view is that concerned with the administrator as a person and with the qualities and effects of his personal characteristics on the people being administered. This point of view will be labeled the "Administrator."

We have become accustomed to living in what we believe is a real world in which two plus two equals four. Most commonly, we believe that this is a rational and knowable world in which things appear much the same to different people. Furthermore, much of our thinking suggests that we believe that this rational and knowable world is made up of categories of events or things and that most often these exist in dichotomies such as day and night, black and white, and truth and falsehood. That day and night are not the same at any two places on the globe at the same time, that black is black and white is white only under certain conditions, and that truth and falsehood are most difficult to separate does not seem to disturb the manner of our thinking. We believe also that science is the tool by which we can explore our real world and discover its true nature. Since science deals best with empirical data, often of the type which is directly observable, we have come to believe that science deals with the real world and that anything not directly observable is not fit subject for scientific inquiry. That much of the data of the physical sciences are not directly observable and are known only through their effects does not seem to disturb our stereotypes.

It is a shock for many people to discover that the answer to the simple arithmetic problem posed by the question, "What is the sum of ten plus five?" is not necessarily fifteen. We must remind ourselves that the answer of fifteen is correct only under certain definable and assumed conditions--conditions which we have more or less arbitrarily agreed upon. Briefly, ten plus five equals fifteen only when we are computing in an infinite decimal system. If we change these conditions we also change the answer. Suppose that we use a base twelve, finite numbering system such as the one on which our clocks are based. Then, ten plus five equals three, except when we use a 24 hour clock (in which case 24 plus one equals one.) Although this may appear fantastic, we should remember that many of our electronic computers operate with the base two or binary system.

Much of our thinking in the social sciences, within which I include education, is conditioned on the assumption that Cartesian dichotomies are representative of reality. Accordingly, there is a real world and there is the world of experience. At no time has this been more evident in education than at the present. We are pressured on all sides to teach children more and more about our real world and to concentrate less on their worlds of experience--that is on things as they appear to be to the individual.

The scientific study of school administration has shown many of these same features. Indeed, we have come close to equating the scientific study of school administration with the study of objectively verifiable behavior. We have come more or less to an agreement that what really counts is what a person does. And I would not wish to argue that this approach to school administration has not borne fruitful results as can be seen by even a casual review of the research literature in educational administration.

What this research seems to show is that if an educational administrator does certain things that his chances for success are greater than if he does other things. More properly, it seems to have been demonstrated that successful administrators do certain things and that less successful administrators do not do them as often or that they do other things. We have concluded, from these findings, that the things an administrator does account for his success or lack of success. Our thinking proceeds like this. In the very real world in which we live, if we do this, then a certain response is more likely to follow because both the administrator and the administered are dealing with the same real world. (We should recognize, too, that all studies have not been concerned with "success." Some have sought only to study behavior.)

This line of thinking has led us into studies of competencies such as those of the Southern States Cooperative Program in Educational Administration and later at the University of Mississippi under the Associated Programs in Educational Administration. These studies sought answers to the questions, "What competencies are needed for successful administration?" and "Is there a desirable configuration of competencies or patterns of competencies in which strength in certain competencies can balance a lack of strength in others?"

The "In-Basket" technique investigated by Griffiths and others illustrates the type of study concerned with behavior, the questions being, "How does an administrator behave when given various 'standard' tasks?" and "What are the dimensions of administrative behavior?"

Investigations in educational administration which follow these lines have contributed to our knowledge, and as all fruitful research does, have raised some intriguing questions. For example, how is it that some administrators are successful while others who appear to be doing the same things are less successful and in some instances, unsuccessful?

Another type of problem is that raised by the University of Florida in its Kellogg research. Among other things, this project showed that a pattern of democratic leadership may exist. However, definitions of what is democratic leadership differed according to the socio-economic level of the group being administered. What was democratic for one group was authoritarian for another and laissez faire for a third.

Florida found, too, that if you are successful in an in-service program that you may change the degree of success of the administrator but not necessarily the things he does. To use a somewhat ridiculous illustration of my own making, before such a workshop, an administrator may stand in front of the faculty members who are seated in regular rows (he is then classed as less democratic than if either he sits or sits in a circle with his faculty). After the workshop he may still be standing and, thus, he has not changed this particular bit of behavior but he may be better received by his group. On the other hand, after the workshop he may be seated in a circle with his staff while he continues to read the routine announcements and to make decisions for the group. In this case, he has changed his behavior somewhat, but he is still seen in the same way by the group. (Let me apologize to authors of the studies above for the oversimplification of their work. My purpose is only to establish a frame of reference.)

Perhaps a new frame of reference would be helpful in answering these questions. A request for a new frame of reference should not threaten us too much for after all most of the "breakthroughs" in science come from a change in our frame of reference. Remember, too, that the example of ten plus five shows us that we often use more than one frame of reference. Using many frames of reference is not new to us. We do it each day. I recall an administrator who in his psychology was always completely objective to the point of logical positivism. His psychological explanations were always formulated from this point of view. But when I would ask him why he did something his explanation was always from an experiential point of view. He would respond, "It made sense," or "I would have been a fool to have done otherwise," or "This is the thing that appealed to me most."

However, people do not always take too kindly to suggestions for a new frame of reference. We should perhaps remind ourselves of what happened to Galileo when he suggested that Aristotle's point of view might not be accurate. After he had demonstrated that bodies fall with the same velocity regardless of their weight, the church fathers decided that this sort of demon had already had his day and they promptly ran him out of town.

With this in mind I would still like to suggest a different frame of reference as perhaps being a productive adjunct for viewing educational administration. What I would like to propose is that the administered do not respond blindly to the behavior of an administrator _per se_ but to the meaning of the behavior to them in terms of their individual worlds as they see these worlds. May I suggest that I am limiting my view of administration to its leadership aspect. I am not here concerned with the construction of buildings, with the transportation of pupils, or with the administration of a budget _per se_ but to what I consider to be the most important aspect of educational administration--the leadership function.

Neither would I want to intimate that transportation, budget development, and building construction do not require leadership. What I want is a more abstract definition for the present moment. May I, therefore, define leadership in terms of helping people make decisions and helping them to grow and to mature in their ability to assume responsibility and to plot intelligent courses of action? May I recognize, too, that for many people I have now left the realm of administration. As they see it, administration has little, if anything, to do with leadership as I am defining it.

Another thing I wish to clarify is that I am not saying that in short term contacts with another person that we can respond to anything other than his observable behavior. I am talking about the long-range development among people, especially the administrator and the administered.

More specifically, I am suggesting that when a person behaves he does so in terms of the world as he views it at the instant of action. This world is never the same for two people and it is never the same for one person from one time to another, but it is to his immediate perception of his world that the person responds. And his response is partially determined by what he believes is the view the other person has of him. He does not respond only to the other person's behavior but to what this behavior tells him about how the other person sees him as a person. In a moment I will try to be more specific about this but right now let me try to illustrate this from everyday life.

How often have we seen a person address a friend in terms and in tone of voice which would be exceedingly offensive to us if directed toward us by a stranger? Consider the pet terms with which men refer to their friends. Or even the terms a person addresses to himself, for example, at a poker table when he holds a tightly contested but losing hand. What the friend sees is not the behavior but the meaning of the behavior in terms of what it tells him about how the other person sees him. At home we are never as guarded in our talk since, if the honeymoon is over, we know that we will not be judged on the basis of isolated behavior but on the basis of what the other person knows about our beliefs about his worth.

One of the most fascinating understandings which has been developed about personality has come to us from the area of psychotherapy. In this close relationship between two people we have come to a new view of personality. Typically the client coming for therapy feels isolated and lonely. Problems are not owned by self. The problems which are stated are usually negative in form and are external to the person. More often they are more concerned with symptoms of problems than with the problems themself. Most typically, problems that are related are non-self concerns; they deal with other people or with situations. The locus of responsibility for the problems and for their solution is external to the self and there is much backward looking. We can illustrate this by the mother who comes to see the psychologist about her child. The problem is not within herself, instead it concerns the child's behavior. Her problem is stated in the negative and is usually concerned with the symptoms rather than with the problem itself. "I can't get him to eat," or "He simply will not sleep like he used to." The comparison with the past is fairly obvious. Her suggested solutions to the problem show that she sees the causes and the solution of the problem as outside of herself. Often she will suggest that what really needs changing is the father.

As the client proceeds through therapy, and assuming that it is successful, there is a gradual and predictable change. Problems become owned by self. There is an increased belief in the worthwhileness of the self and in the worth of other people. Problems are projected more into the future and responsibility for their solution becomes a matter of personal concern. Attitudes toward self and other people become positive and concerns move from external to internal with increased attention to central aspects of the problem.

Gradually, the client arrives at a place which we may call process, that is, at a state wherein problems are perceived with a clarity of detail and with an immediacy never before possible for this person. Most characteristics of the person in this state is his ability to perceive broadly, to have available, without distortion or denial, both his present and past experience, and a fluidity and flexibility that permits him to change as he gains additional experience. The person at this point is said to be "In Process", an ever-changing, expanding, developing, and maturing stage.

And we may call the continuum along which our client has come a process continuum and note that it extends from an end which is called stasis to the end of process. One additional comment seems necessary, that is, that it seems possible to arrange all people along such a continuum and that the process conception may be a valuable one for producing additional understandings of personality. Although the notion of process arose in the therapy setting, we have come to understand its applicability to people in general.

It does not seem to be necessary to stress the point that process seems to represent a desirable condition for people. It seems to be strangely like the outcomes we desire from educational experiences and in our present context from administrator-administered relationships.

What does seem important to stress are the conditions which seem to be both necessary and sufficient for helping people to grow in this direction. It is necessary to do so in this paper so that we can see the relevance of the process concept for the two contrasting views of educational administration we are considering.

Certain definable conditions seem to promote process in other people. We know that if we place troubled people in contact with counselors in relationships characterized by these conditions that the troubled person will move toward process. Recent research enables us also to state that if we place people with problems, that is people like you and me, in relationships characterized by these same conditions that the people will move toward process and toward self-determined solutions to their problems. Remember, please, that all life presents problems. Having problems does not make people peculiar Indeed, progress seems to stem from problem solving. What are these conditions? Briefly, they are: 1. a high level of empathic understanding, by which we mean that the person is empathetically received--that he is understood as he understands himself, 2. a high level of regard, that is, he is seen by the other person as having worth as a person, 3. unconditionality of regard which is to say that no conditions are placed on his worth by the other person saying or implying things such as, "I will like you or accept you as having worth if you are any of a number of conditions which I value such as having status, prestige, wealth, or many other things," and 4. congruence on the part of the other person, which is to say that what the other person does is consistent with what he thinks or feels. The four factors then are empathic understanding, high level of regard, unconditionality of regard, and congruence. To repeat, we know that if we place a person with problems in contact with another person and if these contacts are characterized by empathic understanding, and a high level of regard and unconditionality of regard, and if the other person is congruent in the relationship, and if these conditions prevail over a sufficiently long period of time, then the person with the problems moves toward process.

What is really of importance in all of this to us at this point is the fact that it is not so much what the helping person in the relationship does which effects the change in the person being helped as it is how the helping person perceives the person to be helped and how the person being helped perceives the helper. It is the inner state, the outlook if you wish, of the helper which is most important to the growth of the person being helped.

In many ways the regard we have for other people is communicated to them. You may wish to say that all of these ways are behavioral and this is probably correct. But I would want to stress that when we focus on the behavior, the meaning of the behavior often escapes us. Too, it is probably not the behavior per se at which the person being helped looks but at the pattern of the behavior, its consistencies and inconsistencies, and more importantly, the meanings which are conveyed by the patterns.

And there is no doubt that the inner state of being of the helper is communicated to the person being helped. A number ago we were able to demonstrate that successful and less successful administrators and teachers are distinguishable on the basis of attitudes they hold toward themselves and other people. The more successful administrators are people who believe that they have worth and that other people have at least equal worth.[1] The same seems to be true for teachers.

Another interesting study from the past is the one in which we were able to demonstrate that the formal grammar of a person is a road to understanding how the person sees himself and other people.[2] People who accept their own worth and the worth of other people use fewer comparative adjectives, fewer evaluative adjectives, and fewer evaluative adverbs than do people who either think less of themselves or of other people. Personal pronouns are also a key to understanding a person's regard for himself and for other people. The pronouns of the person who is accepting of his own worth and the worth of other people are more often of the type "we, us, and our" than are the pronouns of other people. Verb action is also another key to understanding the regard of the other person for himself and for other people. People who are accepting of themselves and of other people, use a balance of "thinking and feeling" versus "doing" verbs whereas other people are unbalanced in their verbs, using a predominance of either thinking and feeling verbs or of doing verbs. It seems safe to conclude that the formal speech characteristics of a person are valuable aids in our inferences about the regard of the other person for himself and for us. I do not believe that we form our opinions of other people on the basis of their formal speech characteristics but that formal speech characteristics enable us to make inferences about the inner state of the other person.

But we should not stop at this point in the discussion. It seems necessary to push ahead one step further and to look at the question, "Can we show that if people hold certain attitudes toward themselves and toward other people, or if people are at different points on the process continuum, that there is a direct relationship between these characteristics and the relationships they are able to effect with other people?"

Several years ago at Auburn, Cummins[3] selected school principals on the basis of how they were perceived by their staffs. He purposely selected two groups--more "democratic" and less "democratic" as judged by rumors he heard from staff members about the kind of principal they had. He first applied the Florida Principal Behavior Check List and found that his selection had been adequate. He then tested the attitudes of the principals toward themselves and toward other people and the role concepts that these principals held. He found that the democratic principals were people who accepted themselves as having worth and other people as having at least equal worth. He also found that the democratic principals held different role concepts than did their counterparts. The democratic principals held role concepts which might be described as freeing and facilitating as compared with the more directing, molding, and manipulating roles of their counterparts.

Cummins then tested the attitudes and role concepts of the teachers. There was a direct relationship between the outlook of the principal and the outlook of the teachers. The democratic principals had teachers who were more accepting of their own worth and the worth of other people than did the less democratic principals. Furthermore, their teachers held more freeing and facilitating role concepts than did the teachers of the less democratic principals.

Cummins' study showed a direct relation between the inner world of the principal and the inner world of the teachers. It did not show that it was not the overt behavior of the principal that caused the difference.

About a year ago we started a study of this problem using teachers and more recently using school administrators. If the concerns of people along the process continuum are indeed different, it should follow that a study of the problems of concern to teachers should reveal much about their position on the continuum and their basic way of perceiving their world. Consequently, we polled about 500 teachers and asked them briefly to note the kinds of problems which were of greatest concern to them. Eventually, we selected 84 problems which seemed to represent the range of the concerns expressed by the teachers. We then rated these problems in terms of whether they were self or non-self, central or peripheral, positive or negative, and future versus present and past. About half of the 84 problems were negative concerns and half were positive.

Following this, we gave these problems to an elementary and a high school faculty with the request that these problems be distributed in a forced and quasi-normal distribution to describe their concerns as teachers. One of our questions was this: Will teachers given a set of problems, sort these problems in terms of some socially acceptable stereotype, placing the positive problems to the right of the distribution and the negative ones to the left or would this present them with a situation in which their personal views would be expressed? The answer to this question was evident in our results. Elementary teachers, all in the same school, agreed on an average only twelve per cent about their problems. The high school teachers agreed even less, only about six per cent. Thus, the way in which the problems were sorted may very well have reflected some of the inner qualities of the teachers.

We then selected at each level in grades three through six one teacher who was more in process as shown by the problems of concern to him and one teacher who was less in process. Following this, we tested the children taught by these teachers, in terms of their attitudes toward self and others. The conclusion is clear. Children taught by more process teachers hold more positive attitudes toward themselves and toward other children than do children taught by less process teachers.

We also initiated a pilot study in the high school by again selecting teachers who were more or less in process. We then asked their pupils to describe the relationship they had with their teachers asking them in effect to describe the way they believed their teachers saw them. In so doing we used a revised form of Barrett-Lennard's Relationship Inventory.[4] The results of this study indicated that process teachers are seen as having a higher level of regard, as being less conditional in their regard, as being more empathic in their understanding, and as being more congruent in the relationship. We should note that these are the conditions which we have already described as being both necessary and sufficient for promoting the development of process people.

Emmerling has extended this latter study by using a more careful selection of teachers, expanding the sample and using a better controlled sample of students, and adding a dimension of the quality of the teaching done by process and less process teachers.[5] His results are no less than amazing. Starting from the point of the inner experiencing of teachers he has been able to demonstrate that highly significant differences exist in the relationship they provide pupils as seen by the pupils and the student centeredness of their instruction.

What these studies suggest to me is that we have been able to progress to a deeper level of understanding at least momentarily by by-passing the overt behavior of people and concentrating more at the level of their perceiving and more especially on how they perceive themselves and other people.

To be sure, certain behavior of people invariably communicates certain attitudes and beliefs about how they see the people who are affected and we can learn much by concentrating at this level which I choose to call administration. But it seems equally clear that what we may be studying is not behavior but the common meanings of behavior and that we may progress more rapidly and to a deeper level by looking behind the behavior and concentrating at the perceptual level. This approach to the study I would like to call "looking at the administrator." And I believe we must make a decision which is different from our present one in which we are concerned almost exclusively with administration--a behavioral process. We must concentrate on both the administrator and administration.

If our purpose is to release the creative potential of people and to open them to their experience, thereby increasing their opportunities for imaginative and innovative behavior, we might consider seriously the need for further thought and research from a perceptual point of view. These same ends perhaps are achievable through a study of overt behavior. More often, though, behavior is studied with another purpose in mind--the prediction and control of human behavior. If our purpose is release or to aid in the development of process people we probably will need to study overt behavior. But we cannot fully understand the results of our efforts without also studying the administrator and this becomes an even more important question when we seek to release rather than to control.

We should probably re-examine our over-concern for manifest behavior to the exclusion of perceptual studies and even with the view that perceptual studies cannot be made scientific or objective. It is my belief that perceptual studies can contribute and perhaps at the present time can contribute disproportionately more than can studies of overt behavior. What seems to be needed is a rapprochement of these two points of view. It seems obvious, to me at least, that both are needed.

FOOTNOTES:

1. **Bills, R.E. About People and Teaching. Lexington: Bureau of School Service, University of Kentucky, 1955.**

2. **Ibid.**

3. **Cummins, R.E. Evaluative Study of Certain Teacher Perceptions Related to Professional Growth. Unpublished doctoral dissertation, Auburn University, Alabama, 1957.**

4. **Barrett-Lennard, G.T. Dimensions of Perceived Therapist Response Related to Therapeutic Change. Unpublished doctoral dissertation, University of Chicago, 1959.**

5. **Emmerling, F. A Study of the Relationships Between Personality Characteristics of Classroom Teachers and Pupil Perceptions of These Teachers. (Tentative title). Proposed doctoral dissertation. Auburn University.**

A MODEL FOR VIEWING ORGANIZATION CONFLICT[*]

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Conflict in organizations is usually considered by administrators and by students of organizations as something to be avoided or eliminated. This reflects a popular preoccupation with morale, human relations, and cooperation, and the general value that peace is good and conflict is bad. As a result, the literature of organization and administration has focused on the settlement of specific instances of conflict, for which human-relations, morale building techniques may be appropriate.

But there are important questions to be raised about organization-wide *management* of conflict, as distinct from the local settlement of conflict. I am interested today in considering (1) the *sources* of conflict within organizations, (2) the *vulnerabilities* of different organizations to conflict, and (3) some of the *devices* employed by organization to manage conflict.

By conflict I mean simply "behavior by organization members which is expended in opposition to other members."

SOURCES AND FORMS OF CONFLICT

Technology and Administrative Allocation

We all know that specialization of activity and responsibility in complex organizations raises questions about the division of rewards and of resources for achieving rewards. Some standards for equating inducements and contributions arise in every organization to handle problems associated with division of labor and resources. But official standards do not always prevent feelings of *relative deprivation* which may, in turn, lead to conflict. Professors, for example, may know that they *are* the university, but that administrators get the high salaries; the resulting feeling of relative deprivation may intrude in many ways into the interaction between professor and administrator.

The more complex the division of labor, the more difficult the formulation and application of standards for equating inducements and contributions. Even when members accept the *standards* as fair and legitimate, they may feel that interpretation and application is unfair in specific instances.

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[*] This paper is condensed from Thompson, "Organizational Management of Conflict," *Administrative Science Quarterly*, Vol 4, No. 4, March, 1960.

Now I have suggested that this kind of conflict is triggered by one member of the organization comparing his "lot" with that of another. But what is the basis of such comparisons? It is the differentiation--of responsibilities, authority, salary, equipment, and so on--which is forced upon us by the *technologies* which are growing even more complex. At one time an "adequate" elementary education could be provided by one teacher in one room, with a modest shelf of books, workbenches, and slates. Today an "adequate" education requires a battery of specialized teachers, a library and librarian, elaborate visual aids and television, and laboratories. The technology--the sets of activities which *together* produce a result--has been made much more complex and raises questions about *which* teachers have the harder jobs, and so on.

As a technology becomes elaborated and specialized into a number of different positions, organizations also face questions about the *interaction* of persons in those positions--for highly differentiated technologies often require highly integrated activities from their specialists. Thus, we find that individuals in modern organizations are not only differentiated from one another in a variety of ways, but that they are required to interact with one another so that their differences become noticeable.

Both differentiation and interaction are inescapable in organizations operating complex technologies; they are dictated by those technologies. But administrators usually have discretion over the assignment of specific activities and responsibilities to specific positions, and also over the division of rewards. There seems no alternative to an organization having hierarchical levels but the *number* of levels is not dictated by technology. Departmentalization seems mandatory--but there are alternative ways of departmentalizing, as illustrated by experiments with "teaching teams." Interaction of members is unavoidable, but there may be alternative ways of channeling such interaction.

In summary, I am saying that *technologies* require *differentiation* and *interaction*, that these inherently contain the seeds of *conflict* arising from *relative deprivations*, but that administrators have some control over the (a) number and kinds of categories and (b) the patterns of interaction among members of different categories. It is at these points of discretion and control that administrators may manage (though not prevent) organization conflict stemming from technology.

Labor Force and Latent Roles

In the complicated societies which rely heavily on formal organizations, there is a wide variety of distinctions between individuals, who may be categorized as old or young, Yankee or rebel, Republican or Democrat. Racial and ethnic origins, family lineage, socioeconomic class, and religious beliefs frequently are the criteria for sorting individuals into categories.

Many of these distinctions are irrelevant to the official roles and technologies of a particular organization, and are supposed to *remain latent* whenever members are acting on behalf of the organization. But we know that these *latent roles* can "spill over" and become active in organizations; this is reflected, for example, in cliques, nepotism, patronage and favoritism.

The vulnerability of an organization to conflict based on latent roles depends largely on the composition of that portion of society from which the organization recruits. The more heterogeneous the labor force, the greater the liklihood that members will possess differentiated latent roles--as well as the necessarily different skills. If trained librarians, for example, are not available locally, they may have to be imported from another region--and bring along all of their "foreign" ideas.

Thus, the organization with a complex technology is forced to recruit those who have the necessary skills, and may be forced to accept as members those who are quite different from one another in terms of latent roles. But the organization retains some discretion in this matter, for its recruitment and selection procedures can limit diversity or maintain it within manageable patterns. To that extent, the organization can manage the potential conflict in latent roles diversity.

Contradictory Pressures and Organizational Posture

Because organizations and their environments are interdependent, actions by elements of the environment can create dilemmas for the organization, "putting it on the spot" where it must make a choice or a commitment in one direction and forego another direction. The internal struggles to resolve such dilemmas are major problems for administrators, of course, but other members who hold no organizational responsibility for making such choices may easily become involved in conflict resulting from such dilemmas. When a dilemma issue arises, for example, two or more factions may congeal within the organization, each seeking to have the issue resolved according to its criterion. But even after the decision and commitment have been made, hostility between factions--between those who have been "hurt" and those who "won"--may continue.

Now, the more fragmented and heterogeneous the relevant environment, the greater are the possibilities for an organization to be caught up in conflicting demands, expectations, or pressures. The organization usually has little control over the nature of its environment--but it may be able to manage its posture relative to the environment, and thereby manage conflict which rests on competing pressures.

By posture I am referring to the relationship between an organization and its environment, rather than to the characteristics of either the organization or its environment as such. Since it is a relationship which is at issue, the organization does not have full discretion over its posture, but it can by changing its structure affect the relationship. One important aspect of organizational posture is the degree of distinctiveness, eliteness or prestige possessed by the organization. The organization with a unique and important competence is likely to enjoy appreciation, respect or awe from its environment, and thereby have members' identification and loyalty reinforced through interaction with the environment. Another important aspect of posture is the nature of exposure to the environment. Under some conditions, at least, constant exposure of members to a segment of the environment tends to erode their identification with the organization. The proportion of members exposed may also make a difference in the kinds and numbers of problems faced. Where many members are exposed and their loyalties pulled in different directions, the problems of maintaining membership identification undoubtedly are different from where conflicting demands and interests are focused on a few central offices, where they are resolved before being translated into programs for the organization at large.

Thus, by varying the distinctiveness of the organization, the proportion of members exposed and the frequency and regularity of their exposure, the organization gains a measure of control over conflict which stems from potential reactions to competing pressures.

DYNAMICS OF CONFLICT MANAGEMENT

So far I have hypothesized that organizations face three types of potential conflict, that each rests on a different set of conditions, and that for each there is an appropriate defense:

Type of Conflict	Source of Conflict	Defense Device
Administrative allocation	Technology	Organizational structure
Latent roles	Labor force	Recuirment and selection
Competing pressures	Environment	Organizational posture

Now I would like to suggest that (1) there are rather wide variations in the vulnerabilities of different organizations to the three sources of conflict, and (2) that defensive tactics may be interrelated. For purposes of contrasting illustrations I will discuss three "types" of organizations.

The Ideological Organization

Many organizations have as their primary purpose the perpetuation or propagation of certain belief systems. This is particularly true of voluntary associations, such as churches, splinter political parties, or "movement" groups like the WCTU or the John Birch Society. But other organizations may on occasion adopt primarily ideological objectives as, for example, the resistance army, the college committed to a great books program, or a welfare organization with a pioneering or reform mission.

For the ideological organization, a common belief in the objective, or identification with it, is essential. This requirement presents serious problems of conflict management to such organizations.

Proposition 1: For the ideological organization, administrative allocation poses a threat, since it creates a basis for distinctions which may override the homogeneity of beliefs.

One defense is for the organization to remain small and informal, thus escaping the necessity for official allocation. Another defense is to "allocate" undesirable assignments on a volunteer basis, i.e., by giving members the opportunity to demonstrate conviction, worthiness, and commitment. If these defenses are not adequate, I suspect that the ideological organization will sacrifice technical, economic, or efficiency norms, assigning personnel to types of tasks consistent with their general social status irrespective of demonstrated ability. In our society, men would not be subordinated to women, older people to younger, veteran members to newcomers. Finally, if the organization cannot avoid noticeable allocation, it may rely on membership consensus for the allocation of rewarding or prestigeful responsibilities. If forced to employ a formal authority system, this organization may base it on member control or "democracy", thus taking the sting out of authoritative decisions and directives.

Proposition 2: For the ideological organization, a heterogeneous "labor" force calls for special defenses to prevent the emergence of latent role conflict.

This organization can exercise care in pre-admission screening, with emphasis less on technical abilities than on latent-role factors such as "character". Sponsorship by members in good standing is a device frequently employed. If initial recruitment cannot prevent heterogeneity of recruits, a second defense lies in training, testing and the elimination of "misfits". A third defense lies in ritualistic ceremonies and re-affirmations of faith, which serve as reminders of the distinctiveness of the organization and emphasize the "common bonds" of members, thus offsetting their differences. A final defense against latent role conflict is to segregate members into groups, such as a women's auxilliary or age sections.

Proposition 3: The ideological organization is a combat organization, oriented to possible conflict with the environment. Yet it must take special steps to ensure that its members do not subvert organizational objectives in their struggles with outsiders.

Perhaps the most complete defense is to achieve eliteness. If this is not possible, the organization may overcome the effects of competing stimuli by restricting exposure to a few members of tested loyalty. If exposure cannot be so limited, a third line of defense is limitation of the frequency of member exposure, or rotating exposed members from one post to another to prevent the development of sympathy for or identification with any one portion of the environment.

The Giant Enterprise

The phrase "giant enterprise" is used here to refer to those organizations which have non-ideological purposes, highly subdivided technologies, and which do not confine their activity to a local community. Our largest industrial firms fit this category, as do federal and state governments and the military services. Our larger universities probably fit here too.

Proposition 4: Required technological specialization makes differentiation of members unavoidable, the number of possible categories of distinction quite large, and hence the potential for feelings of relative deprivation enormous.

One defense lies in distinctiveness, so that the net advantages of membership are felt to outweigh the relative deprivations when compared with other members' rewards. A second defense, since the myth of homogeneity and equality is impossible, is to take pains to show that administrative allocation of responsibilities, resources, and rewards is done strictly on the basis of technical, economic, or efficiency considerations. When empirical criteria for this defense are lacking, the organization may seek "legitimacy" for its administrative allocations by calling on outside authorities, such as consultants, thus transferring the responsibility for unpopular decisions. A third defense is to reduce the interaction of different specialized members or groups by organizing them into technologically homogeneous units. Finally, the organization may de-emphasize comparisons by "underprivileged" members of other members emphasizing instead the situations of similarly classified persons in other organizations. The complexity of the giant enterprise and of its environment affords a large number of possible reference groups, and the organization may influence the saliency of some over others.

Proposition 5: For the giant enterprise it is the lack of active unofficial (latent) roles, rather than their activation, which constitutes a threat to harmony. Repeated official emphasis on technical, economic, and efficiency norms tends to reinforce differentiation and to minimize communication or interaction, and the inadequacy of communication between interdependent parts becomes a source of conflict in the organization.

The giant enterprise may attempt to group members drawn from a heterogeneous labor force in ways which will foster the activation of homogeneous latent roles. Secondly, it may promote the activation of latent roles by masking latent role differences which would set members apart; the military uniform functions in this way. As a third line of defense the giant enterprise may promote the activation of latent roles that criss-cross official distinctions; such "mixers" as office parties, bowling teams, car-pools and coffee breaks may strengthen relations between officially separated members. As a final defense against those latent roles which are not easily controlled, giant enterprises develop training programs in "human relations", to ensure the local settlement of conflict based on latent role differences.

Proposition 6: The strains and stresses generated by technological differentiation make the giant enterprise particularly vulnerable to conflict over the actions of the environment, since this kind of organization usually faces a heterogeneous environment.

One defense is to try to "homogenize" the environment by standardizing treatment of environmental elements--so that clients get uniform client-treatment, suppliers get standardized receptions, and so on. Rules and procedures to ensure that each exposed member of the organization reacts in identical fashion to similar situations are particularly important. A second defense, if the environment cannot be treated as homogeneous, is to establish semi-autonomous branches each dealing with one class of environmental elements. This not only tends to reduce the potential threat of competing stimuli, but has the added advantage of reducing vulnerability to administrative allocations. To the extent that branches are autonomous, interaction between heterogeneous branches is reduced, and feelings of relative deprivation less likely to develop. Finally, if the giant enterprise is unable to avoid conflict either by altering its internal structure or by changing its posture, it may resort to widening its boundaries, thus encompassing what formerly were elements of the task environment. This may be achieved by cooptation or by merger.

The Community Enterprise

By this I mean organizations employing elaborate, highly differentiated technologies, but differing from the giant enterprise not only in size but also in their markets or clienteles, which tend to be restricted to the same geographic territory that supplies the labor force and other resources. The community hospital, social work agency, or local government usually fall into this category. Many school systems fit here too, I think. But note that if the "locality" in question is a metropolitan complex, such as New York City, the hospital, social work agency, the local government and the school probably fall into the "Giant enterprise" category instead of here.

One of the significant characteristics of the situation is that relationships among members of the community, where also members of the organization or not, are highly intertwined. When the community asks elements of the environment for money, it is often asking individuals who have been patients, or who sell materials to the hospital, or who have been involved in disputes with the hospital over tax exemptions.

I suspect that despite the technological similarities of community and giant enterprises, the community enterprise has conflict vulnerabilities and defenses that tend to parallel those of ideological organizations. Yet the local enterprise differs from the ideological organization, too, for it cannot be as selective in recruitment and has greater interdependence with the task environment than does the combat-oriented ideological organization.

Proposition 7: The community enterprise in a relatively homogeneous community unavoidably has a disruptive role, for it must allocate responsibilities and rewards differentially among members drawn from that undifferentiated community.

A likely defense is tto compromise technical, economic, or efficiency norms and attempt to train recruits to acceptable levels of performance of technical tasks, thereby ensuring that latent-role traditions will be stronger than the divisive forces. Another defense is to take pains to disclaim distinctiveness, emphasizing that its members are "your neighbors." If forced to import specialists, this organization encourages them to put down roots and take an active part in the community. If the organization cannot blend into its environment, it may reduce the effects of competing stimuli by reducing the exposure of its members, focusing exposure on its most presentable members and hiding the more atypical ones.

Proposition 8: If the homogeneous community is suddenly divided the community enterprise is particularly vulnerable to latent role conflict. Because of the many linkages among members of the local community, a community issue is not easily confined to a few channels. Elements of the environment may press the enterprise to take a stand, and latent roles may be activated in organizational contexts.

One defense against this possibility is for the organization to foresee events in the environment which threaten community harmony and to attempt to find early solutions--even when such action is beyond the scope of the organization's "real" purpose. A second line of defense, if prevention of environmental controversies is not possible, is to remain aloof from such controversies; if it has achieved indistinction it may be able to avoid being drawn into the issue.

Proposition 9: The community enterprise in a homogeneous community often faces a dilemma stemming from competing pressures to (a) optimize technological considerations on the one hand and (b) acquiesce to the local climate on the other. These stresses are likely to divide the more highly skilled or professional members from the less skilled members, and imported specialists may form the nucleus of those critical of the efforts of the local community.

The only defense I can see for this situation seems to be the appointment of one or more administrators who are able to maintain the commitments of organization members in spite of compromises. To the extent that this is the main mechanism, it suggests that the community enterprise in a homogeneous community may be uniquely dependent on the personality characteristics and social interaction skills of its administrators.

A RESEARCH APPROACH TO COMPLEX DECISION MAKING

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Introduction

The purpose of this paper is to describe a particular approach to decision-making research and to illustrate its potential applicability to educational administration. The paper is divided into three main parts. The first part attempts to distinguish our particular research approach from others in the general area of decision making. The second part is concerned with the characterization of decision-making environments in terms of a general, formal structure. The third part discusses the consequent need for a method for laying bare this structure in a given, concrete area or context. In other words, we begin with a description of an approach to decision-making research, emphasizing particularly a decision-making context with conditions of realism and complexity; next, we discuss a specific decision-making "model" or typology for human decision-making research; finally, we conclude with the description of a technique by which one can identify those general features of decision making within a context like that of educational administration.

While all varieties of decision-making research are more or less relevant to the various fields of administration, the above outline of our approach suggests that it may be more immediately relevant to administration, because our methods utilize an actual setting as a research context. For those who are interested in special administrative fields, as well as in decision making in general, research embedded in a real-life context usually has three distinct advantages in addition to satisfying the primary research goals. First, content in the field—the aims, the methods, the problem areas, and so on—must be organized and analyzed for purposes of the research, and the resulting analysis can be, in itself, a useful contribution; second, the research results can be more immediately applied, since they are drawn from a setting of actual conditions; and third, as a practical, educational dividend, the participants, as decision makers in a study with realistic situations, gain training experience.

I. Description of Research Aims

Our approach to decision-making research stands midway between two more familiar methods of investigation. On the one hand there is research which takes formal theory as a primary point of departure: conditions are created in the laboratory to mirror the postulates and presuppositions of theory, and the results obtained represent a critical test of the theory's applicability to human behavior under those conditions. On the other hand, there is a type of investigation which takes a practical setting--an organization, a system or any other complex environment--as a point of departure; performance is assessed under conditions of actual practice, and results are usually related to the improvement of performance (training) and/or to the measurement of the decision maker's effect on the total enterprise. These two methods are usually differentiated by labeling them, respectively, as "pure" and "applied" research. It is important to note that these essentially different methods may be investigating essentially different domains. The formal theory of "pure" research may be unable to account for the realism and complexity of actual decision-making practice. On the other hand, studies which expressly include the domain of realism and complexity by concentrating on performance in an actual reference system also may fail to advance our understanding unless the findings can be generalized to other somewhat different reference systems. In short, if conditions of realism and complexity are sufficiently relevant to decision-making behavior to warrant research, it becomes important to consider the extent to which a theoretical framework embodies these conditions and to find some basis for theoretically relating performance in one setting to performance in another.

Limitations of certain theories for human decision making: For rather simple situations, decision-making research and theory have been moderately successful in formalizing and predicting the choice behavior of individuals. This has encouraged theoreticians, particularly mathematicians and economists, to tackle problems of increasing scope and complexity in this area. Von Neumann and Morgenstern (1944) published their now classic work on The Theory of Games and Economic Behavior, which promised to encompass decision-making behavior in problems of ever increasing complexity. This work has all the virtues of precise statement and brilliance of formulation; however, for the psychologist interested in human behavior it also shows how, for purposes of mathematical rigor, the realism of the assumptions regarding man's cognitive capabilities can be ignored in a wholesale fashion. Thus, the game player or decision maker in a von Neumann and Morgenstern game must meet the following rationality requirements: Such a player (1) never overlooks a message, (2) extracts from a message all the information it bears, (3) names things properly and at the appropriate time, (4) forgets nothing, (5) stores and recalls information without distorting it, and (6) never acts on preset rules but always on the basis of the assessed consequences of a choice which best realizes the chances of achieving his goals. Psychologists, who have adopted this framework and all its attendant constraints, have been driven to the study of more and more elementary situations with the consequence that the decision maker rarely has to cope with more than a variation of "heads or tails."

Importance of realism and complexity: By contrast, decision makers in actual settings must perform under conditions of realism and complexity. Realism can be an important condition of decision-making research for two reasons. First, a "realistic" study incorporates, de facto, the goal structure appropriate to actual decision-making behavior; and second, it allows the decision maker the full range of resolution which he might actually employ. In other words, realism is important, not in superficial contrast to the "artificial," but rather because it imposes no limitations (beyond those inherent in the actual setting) which might predetermine or constrain behavior. Similarly, complexity is an important study condition because relative to the decision maker's memory capacities, computational capabilities, information processing strategies, etc., there is obviously a difference between actual situations and the simpler "heads or tails" conditions of theoretically constrained studies. It is possible and even likely that this difference is sufficient to produce associated behavior differences which are more than trivial.

Incorporation of realism and complexity by simulating actual setting. Decision-making behavior under conditions of realism and complexity may best be realized by using a simulated realistic setting as a research vehicle. Simulation has certain advantages over the naturalistic observations taken from the workaday world. Through simulation it is possible to create selected sets of conditions and situations rather than having to work within the unpredictable variability of the actual setting. This permits exclusion or minimizing of many of those factors which might otherwise be extraneous or confounding for a decision-making study. In addition, through manipulation of the simulated environment, it is possible to control the occurrence of decision situations which confront decision makers. Thus, simulation is an effective means of limiting and controlling any actual setting which might be chosen as a decision-making context.

Simulation, then, has certain distinct advantages as a technique for investigations which place a premium on the conditions of actual practice, but it also can be a deceptively powerful techinque, since its limitations can easily be obscured in the very process of implementation. Suppose, for example, that we want to devise a simulation study for educational administrators and have tentatively decided on the procedures and techniques to simulate the environment under study. Next, we would formulate some decision-making situations. We would do well to sample from a range of problems like curriculum, fiscal policy, personnel procurement and supervision, public relations, etc. It is obvious, however, that these are not, strictly speaking, problems but are more appropriately called problem areas. It is within these areas, however, where the particular problems are encountered. Thus, in an area of curriculum, there may be the particular issue of whether to institute a program of modern language in our elementary school. Since we want some guarantee that our situations are typical or representative of problems in the field, we select problems based on our own experience or on experiences reported by others.

Having selected some set of typical or representative problems and having settled on the technical aspects of the simulation, we would now seem to be in a commanding position to complete the details of our design and implement the study. All that remains is for us to translate our specific problems into the terms of our simulation; that is, we create our chosen situations by planning and preparing messages, phone calls, conferences, reports, and so on, as well as some background materials which characterize the particular school setting within which the subjects will perform.*

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*For an excellent illustration and description of the simulation approach in education, see UCEA report, Simulation in Administrative Training (1960).

Possible limitations of simulation studies: The straightforwardness of the foregoing illustration is deceptive on two counts. First, it does not do justice to the detailed difficulties of actually devising such a study. Second, and more germane to the present discussion, it glosses over some considerations of fundamental importance. Notice, for instance, the basis of problem selection. By relying on "field knowledge" to formulate problems, it is possible to circumvent a fundamental theoretical concern. If we raise the question "what is a decision situation?", our reliance on past experience produces an answer of the form "this is one, and this is one," etc. In other words, we enumerate instances, but we do not offer any general characterization of the nature of decision situations.

We find similar considerations when it comes to the detailed creation of specific decision situations. If we select the problem of instituting a program of modern language in the elementary school, on what basis do we "fill in the details?" Which considerations are germane to the problem—budget, personnel, community interest, district policy, classroom space, teacher-pupil ratios? Are all these pertinent and how many others? How are each of these to be represented in the problem? How limiting a budget should be imposed? How qualified should the personnel on the faculty be? Should the problem be initiated by a parent study group? And so forth. It becomes obvious that we can create a large variety of situations under the banner of a single, fairly specific problem; and since the variations are not all trivial, the situations can be genuinely different. On what grounds, then, do we select a given variation? In what senses are the situations different?

Methodological requirements: These questions can be resolved informally and implicitly at the level of "filling in the details" of simulation. One can create problems which will be "typical" or "representative" without recourse to explicit theoretical considerations; at the same time, for all their typical and representative character, the situations created by this process may fail to be either typical or representative when viewed from the framework of a general theoretical typology of decision situations. Yet, for fundamental research study these considerations are of central importance. One must know how a given decision situation is different from another interms other than those of specific content, or how two situations can be essentially the same though clothed in different content. To achieve a more general approach we need to describe and classify types of decision situations in terms of their formal composition or structure rather than content; then we need to identify this structure in an actual setting so that we can use techniques of simulation to create concrete instances of any given type of decision situation. These two matters will be discussed, in turn, in the two following portions of this paper.

II. Structure and Typology of Decision Situations

This part describes a conceptual approach which copes with the research problems associated with the study of human decision making under conditions of realism and complexity.

As we have seen, there are conceptions of decision makers and decision situations which, for purposes of mathematical rigor, assume certain propensities and properties of decision makers and their environment that are not consistent with even casual observations of mortal men in practical situations. Our first task then is to find a suitable typology for characterizing decision situations which can be applied in a context of complexity. This means developing or finding an approach which is (1) realistic about man's capability and (2) capable of coping with the kinds of complexity that might be encountered in a variety of real-life decision situations. In the writings of James March and Herbert Simon (1958) and Simon (1957) we find many of the essentials for which we are searching.

Limited rationality: One important feature in their approach is the shift in emphasis from a rational man model to that of a limitedly rational man. To make complex decision problems tractable, economic theorists generally assume that man optimizes or maximizes. This requires that there be available a set of values or criteria that permit each alternative considered to be uniquely evaluated. The decision maker, then, presumably translates these different values to a common scale which permits him to identify and choose the most preferred or the optimal alternative in that set. On the other hand, March and Simon propose that, in place of such optimizing behavior, man "satistices"; that is, he chooses that alternative which meets or exceeds all of his criteria. The attempt is not to find the best alternative, but simply one which is "good enough" to serve the perceived purposes. Thus, in a game of chess, players do not exhaustively explore all possible moves before choosing; instead they find a move which is satisfactory to the situation as they perceive it. Satisficing behavior, rather than optimizing behavior, is illustrative of March and Simon's emphasis on more realistic expectations of human decision makers.

Rule following and decision situations: A second feature, and one to which we give central importance in our work, is the distinction between choice in rule-following situations and choice in decision situations proper. An illustration may help to make this distinction clear. In elementary chemistry courses on qualitative analysis, flow charts are used to assist in identifying the unknown elements contained in a test tube. The decisions involved in following such a flow chart are illustrative of what we refer to here as rule following. At each successive step in the chemical analysis the procedure is specified depending upon what is found at an earlier step. Thus, depending on whether a precipitate or a color change is obtained following the addition of an acid or a base, a determination is made as to the presence or absence of ions or classes of these, after which further steps may be needed or followed. Thus, a seemingly complex situation may be broken up into a series of discrete steps, each direct and simple in itself, but which together solve the problem of what on earth is in that test tube. This, incidentally, is the way in which a computer tackles a problem--by breaking it down into a number of simpler problems and these in turn into simpler ones, until the sub-problems can be answered in a "yes-no" fashion at each step. There still remains the problem of obtaining the information necessary at each juncture and deciding when information is less than perfect. Is there really enough red in that flame test to justify concluding that potassium ions are present? Is that radar blip a missile or a meteor? Are we dealing with qualified teachers or not?

How such questions are answered is itself a decision problem, particularly where information is less than perfect. In fact, how individuals choose in the face of uncertainty is the concern of much of decision processes research. Since an individual does not have infinite time to evaluate his information and has other activities which demand his attention, he must decide how long he can afford to devote to gathering or improving the information before deciding "yes" or "no." Even in the so-called rule-following area of decisions, second and higher order decisions may be required. However, decision choices in the rule-following area all share the following characteristic. They are explicitly stateable in a form "If A, then B"; once a determination is reached regarding "A or not A," the decision about option B follows directly.

By contrast, there are decision situations proper where contingent choices are not explicit, even when relevant data are available and unambiguous. These generally occur where the numbers of considerations that go into the evaluation of the alternative set is large and complex and not easily summarized and where the relative goodness of various alternatives may change with any change of the environment. It is for this reason that such situations are not delineated by specific rules--because to describe situations of even moderate complexity with rule-following routines, assuming they could even be so enumerated, books the size of telephone directories would be necessary. It is in situations such as these then, that we place the decision maker with practical experience, not being quite sure why and how he makes effective decisions and sometimes whether he even does so. In effect, we define a rule-following situation as one in which there is a rule or procedure which equivocably applies and we define a decision situation proper as one where such a rule or procedure is not available. At this point it might be well to note that, although rule following may be quite complex and decision making in decision situations proper quite simple, the reverse is generally the case.

Types of decision situations: A third feature of the March-Simon approach is the scheme they provide for classifying types of decision situations. Whenever a contemplated course of action--that is, an available alternative--clearly and uniquely leads to the satisfaction of the accepted goal, the decision maker can simply and unhesitatingly make that selection. These are simple decision situations and their resolution is immediately obvious. If, however, the decision maker faces a situation in which the envisioned alternatives fail to include among them at least one which is clearly and uniquely better than the others and if, in addition, no alternative is good enough for the achievement of the given goal(s), then we can anticipate a state of indecision or conflict which the decision maker must resolve or which events may resolve for him. These states are of three general types: (1) unacceptability--when the best of the perceived alternatives will not achieve the desired results; (2) uncertainty--when the likelihood of achievement of the desired results by means of contemplated alternatives is unknown; (3) incomparability--when available but mutually exclusive alternatives are equally satisfactory with respect to given goals.

These decision situations are characterized by March and Simon in more detail by tracing their generation from the various combinations of available alternatives. Each alternative is classified in terms of the likelihood with which it leads to a desirable and/or an undesirable state--that is, as it achieves or more closely approaches each of the accepted goals or fails to do so. An alternative may be good if it leads to achievement; mixed if it leads to desired achievement of one or more goals and prohibits realization of other goals; bland if it neither achieves nor prohibits to any great extent, uncertain if the feasibility of its employment or the likelihood of its success on being employed is indeterminate. These five types of alternatives, when combined in various ways, make up the unacceptable, uncertain, incomparable, or simple decision standards.

III. Procedural Analysis of Real Life Context *

Our discussion began by considering the simulation of an actual setting as a means of studying decision-making behavior under conditions of realism and complexity. The discussion moved on to a structure and typology of decision situations appropriate to decision-making behavior in answer to the need for a general theoretical basis for the research. Finally, it is necessary to identify these general decision-making concepts within the actual setting to be simulated in a particular study. The use of an actual setting as a research context requires techniques for analyzing the content of actual conditions in these decision-making terms--to distinguish between rule following and decision situations, to find alternatives and their conditions of availability, and to identify the conditions affecting the evaluation of a course of action. This section discusses these techniques.

General features of decision-making environment: When viewed as a decision-making context, an actual setting like educational administration is distinguished from any other, such as air defense, by differences in specific content. Thus, a decision concerning curriculum differs in obvious ways from one concerning aircraft assignment. But if these obvious content differences are not to be limiting, then it is necessary to look behind the differences in specific content for some general features and relationships which can characterize the content structure of any field. One general approach to this problem is to organize a content area in terms of its goals, contextual conditions, and procedures. Using these distinctions, the structure of a given decision-making environment is analyzed in terms of the relationship among these general features.

The concept of "goals" is sufficiently familiar and the content of "goals" needs no further explanation in a field which contains such works as Bloom's Taxonomy of Educational Objectives (1956), but perhaps there is enough specialized meaning to "contextual conditions" and "procedures" to deserve amplification.

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*A specific example of a procedural analysis in the area of educational administration is provided in the appendix to the paper.

"Contextual conditions" refers to those aspects of the environment which are relevant to the attainment of a goal. For instance, availability of qualified teachers would be a consideration in many matters relating to curriculum which, in turn, are directly pertinent to educational goals. Contextual conditions, from this point of view, are the "facts in the case" or the particular circumstances which may create a decision situation and which may be assessed in its resolution. In a given area, these particular circumstances often can be summarized into such areas as budget, personnel, community interest, classroom space, level of student ability, etc. These then may be treated as the relevant variables for a given content area. At the very least these serve as a check list for determining the range and types of circumstance pertinent to the evocation of decision situations, and the availability and evaluation of alternatives; where more precise, analytic relationships between these variables can be specified, more sophisticated assessments of them may serve as a general evaluative tool as, for instance, in operations research.

"Procedures" are the ways and means by which goals are achieved, or at least approximated. Pupil grouping procedures, in-service training, established maximums for teacher-pupil ratio, special curriculum programs, are some examples of the practices, methods or procedures through which educational objectives are achieved. Some of these procedures may be standard practice as established by higher levels of administration and thereby become requirements to be met rather than alternative courses of action. The ratio of "teachers available to students enrolled" and the "required teacher-pupil ratio" illustrate the distinction between contextual conditions and procedural requirements.

Rule following and decision situations: The basic materials used in this analysis are the formulations of procedure--the requirements, standard practices, directives--to which an administrator is committed in actual practice.* These are subjected to a systematic examination which employs a very simple technique for identifying and delineating decision situations. If we assume that for any given situation there is a procedure or specified course of action which unequivocally applied (programmed procedure), then there would be no need for decision making--i.e., there would be, strictly speaking, only rules to follow. Conversely, decision situations can be identified as those generally defined circumstances for which there is no unequivocally specified procedure or course of action (non-programmed procedures). In other words, by proceeding as if there were no decision situations, we are able to identify as decision-making areas those junctures where our assumption fails.

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*When most administrators come into the scene, there is already a large existing body of formulated procedures. It would be a conceptual miscalculation not to consider that this context of operation is formulated and determined to a great degree. For example, the primary task of much administration is not to rethink or redesign the educational system but to work within the existing requirements, standard practices, methods, directives, and procedures. This is not to say that the administrator is absolved of responsibility for weighing goals and relating these to his circumstances; neither does it preclude innovative behavior on his part. It only recognizes the fact that he is not primarily a reformer of the educational system.

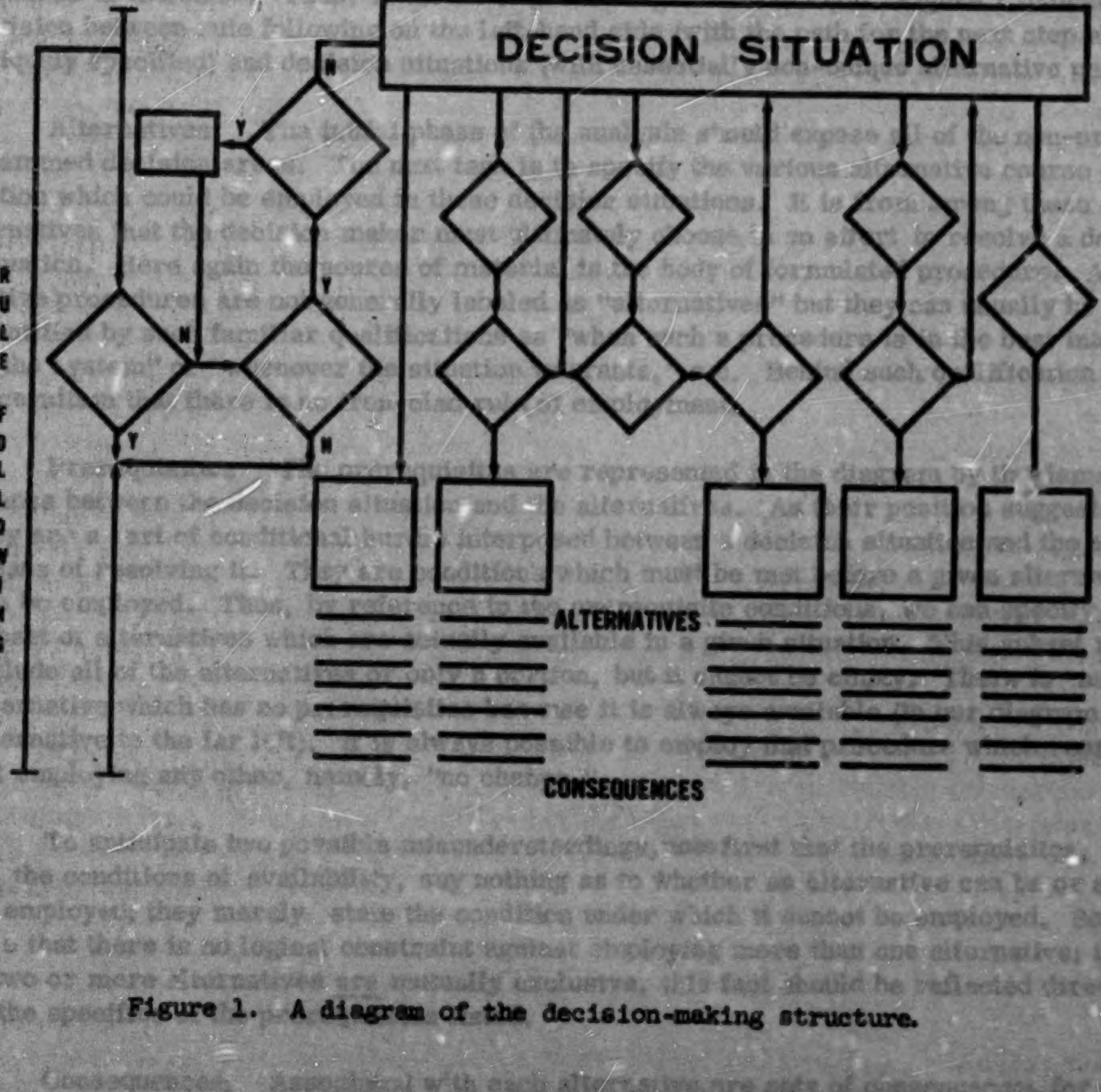
DECISION SITUATION
N
Y
Y
N
Y
N
RULE FOLLOWING
ALTERNATIVES
CONSEQUENCES

Figure 1. A diagram of the decision-making structure.

This sort of left-handed approach is not as backward as it might at first appear. Since our intent is to separate areas of programmed procedure, and since these are mutually exclusive, the identification of one area will define, by exclusion from the whole, the other. It is merely easier to begin by identifying the programmed portions first. Wherever such specified relationships are forthcoming from the body of directives, standard practices, regulations, et al., they are diagrammed appropriately and the analysis continued; however, where this unequivocal specification is not forthcoming, a decision situation is indicated. Thus, in terms of gross diagrammatic logic, Figure 1 indicates a division between rule following on the left-hand side (with the path for the next step always uniquely specified) and decision situations (with essentially non-unique alternative paths).

Alternatives: The initial phase of the analysis should expose all of the non-programmed decision areas. The next task is to specify the various alternative course of action which could be employed in these decision situations. It is from among these alternatives that the decision maker must ultimately choose in an effort to resolve a decision situation. Here again the source of material is the body of formulated procedure. Alternative procedures are not generally labeled as "alternatives" but they can usually be identified by such familiar qualifications as "when such a procedure is in the best interests of the system" or "whenever the situation warrants," etc. Behind such qualification is the recognition that there is no iron-clad rule of employment.

Prerequisites: The prerequisites are represented in the diagram by the demand shapes between the decision situation and the alternatives. As their position suggests, they are a sort of conditional hurdle interposed between a decision situation and the various means of resolving it. They are conditions which must be met before a given alternative can be employed. Thus, by reference to the prerequisite conditions, we can specify the subset of alternatives which are actually available in a given situation. This subset may include all of the alternatives or only a portion, but it cannot be empty. There is one alternative which has no prerequisites because it is always available (in our diagram, the alternative to the far left). It is always possible to employ that procedure which represents not employing any other, namely, "no change."

To anticipate two possible misunderstandings, note first that the prerequisites, that is, the conditions of availability, say nothing as to whether an alternative can be or should be employed; they merely state the condition under which it cannot be employed. Second, note that there is no logical constraint against employing more than one alternative; in fact, if two or more alternatives are mutually exclusive, this fact should be reflected directly in the specifics of the prerequisites listed.

Consequences: Associated with each alternative are sets of consequences for each given course of action. Subsets of these consequences will be generally efficacious in achieving organization goals; other subsets will be generally prohibitive—but not all will be invariably and constantly efficacious or prohibitive under any circumstances. Indeed, if this were the case, preferential ordering rules could be established in advance, thereby achieving a set of programmed procedure for any and all situations—and consequently transforming the decision situation into a rule following one. On the other hand, decision situations are not so indeterminate as to render all decisions mere shots in the dark. The essential point is this: It is possible to identify sets of consequences relevant to a given course of action even where it may not be feasible to specify in advance a preferential ordering of alternatives which is invariant under any and all circumstances.

Utility of procedural analysis: In the preceding discussion the role of the procedural analysis in research has been emphasized. The utility of such an analysis, however, extends considerably beyond its role as a tool in research. Since the analysis requires a highly explicit and formal organization of the content relevant to decision making, it is particularly useful in revealing certain deficiencies in the existing specifications covering the field, since these specifications are less systematically organized. Thus, it may be possible to detect overlapping and inconsistent rules or ambiguities which require further specification if rule following is to successfully cope with a situation. Conversely, it may be discovered that situations thought to be rule following ones are best handled as decision situations because of the complexity of variables and goals which bear upon their resolution. Thus, the finished procedural analysis will almost inevitably suggest revisions of the very documents and procedures on which it is based.

The results of the procedural analysis also constitute an indoctrination and training aid of remarkable power. The analysis provides an opportunity to trace the development of conditions which lead to each decision situation and to note all of the alternatives available as well as the goals which are relevant to the area, the prerequisites to the employment of alternatives, and the factors in the environment which alter the utility of the alternative set. Thus, possibilities and considerations which might otherwise be overlooked can be easily and clearly evoked for consideration of any particular configuration of circumstance in which the decision situation is embedded. These features suggest the utility of the analysis in designing training exercises and assessing the decision maker's performance.

Finally, in connection with the problem of administrative organization for optimal resolution of decision situations, the analysis may be used as an exact specification of associated informational requirements and of the locus and concentration of decisions. Such information suggests the need for basis for reallocation of responsibilities to improve decision handling and resolution.

Summary

We propose to conduct investigations of the human decision-making process under conditions of realism and complexity in order to minimize the influence exercised by a confined and artificial setting. This approach poses certain immediate problems with respect to considerations of generality. Since the strategy requires the selection of some specific and concrete context for an experimental setting, there is the difficulty that projected results would be confined in generality to a particular environment or, even worse, to just those specific problems, incidents, or crises introduced for study. To obviate this difficulty, there is the need to conceptualize the decision situation in less particular terms and especially in terms which are consistent with the cognitive capabilities and predilictions of the human decision maker. To this end a conceptual framework or typology of decision situations is outlined.

Using the conceptual framework, a procedural analysis technique is proposed for describing the structure of a specific decision-making environment by analyzing the body of procedures pertaining to it. In this analysis a distinction is made between areas susceptible to completely programmed procedures (rule-following situations) and those which are not (decision situations proper). For each of the latter areas a set of alternatives is identified together with their prerequisites of implementation and their consequences relative to the goals or subgoals involved. Finally, in carrying out a laboratory study, the conceptual typology and the results of the procedural analysis provide a basis for selecting simulation inputs to accomplish the following: creative objectively defined decision situations (by pre-empting rule following at appropriate junctures), limit the set of available alternatives (by precluding the satisfaction of prerequisites), and vary the efficacy of procedure with respect to goals and hence the evaluation of alternatives (by controlling the circumstances of contextual conditions which determine consequences). In short, this approach translates complex and realistic conditions into the terms of a general decision-making typology in which neither complexity nor generality are sacrificed in the study of decision-making behavior.

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BD

RULE FOLLOWING

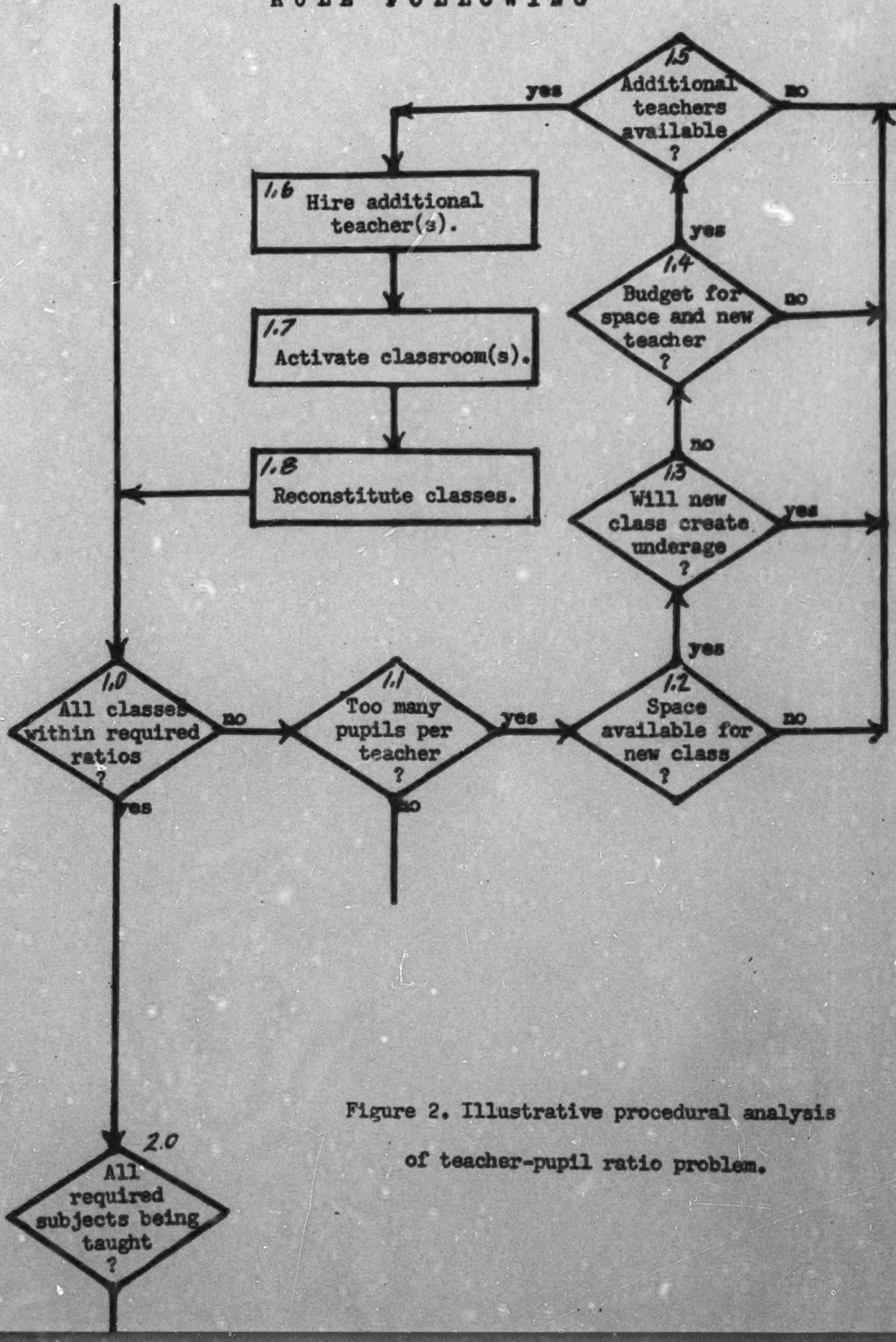
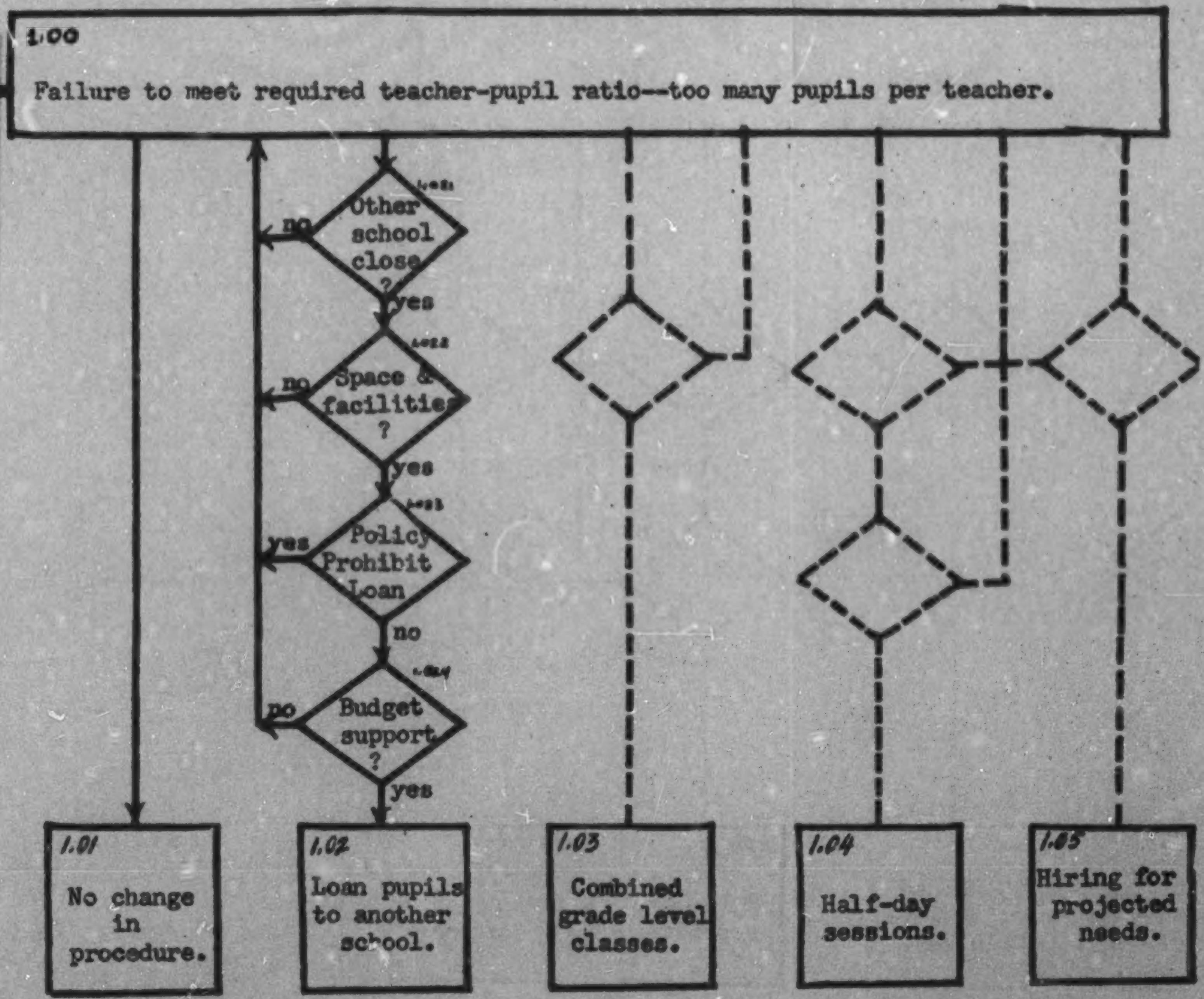

1.5
Additional teachers available ?
yes
no
1.6
Hire additional teacher(s).
1.7
Activate classroom(s).
1.8
Reconstitute classes.
yes
1.4
Budget for space and new teacher ?
no
no
1.3
Will new class create underage ?
yes
yes
1.0
All classes within required ratios ?
no
1.1
Too many pupils per teacher ?
yes
1.2
Space available for new class ?
no
yes
no
2.0
All required subjects being taught ?

Figure 2. Illustrative procedural analysis

of teacher-pupil ratio problem.

1.00
Failure
1.01
Nc
i
proc
Over
effe
teach
situa
Par
act
ove
cla
Mai
A.D
. .

DECISION SITUATION


1.00
Failure to meet required teacher-pupil ratio--too many pupils per teacher.
1.021
Other school close ?
no
yes
1.022
Space & facilities ?
no
yes
1.023
Policy Prohibit Loan
yes
no
1.024
Budget support ?
no
yes
1.01
No change in procedure.
1.02
Loan pupils to another school.
1.03
Combined grade level classes.
1.04
Half-day sessions.
1.05
Hiring for projected needs.

Overage's effect on teaching situation.

Parent reaction to oversize classes.

Maintain A.D.A.

. . . .

Overage or not?

Parent reaction to loan.

Reduction of A.D.A. payment.

. . . .

Appendix

The purpose of this appendix is to illustrate a procedural analysis by applying it to a specific content area in educational administration. For our illustration we shall concentrate specifically on the first of the eight areas suggested by the Southern States Cooperative Program in Educational Administration (SSCPEA) in its "Competency Pattern in Educational Administration" (1955), namely, Instruction and Curriculum Development. Also, since the procedures vary from level to level of administration and from one locality to another, we shall arbitrarily select a given level and supply some reasonable local procedures in the examples which we use. We have chosen the principal's level in a "typical" elementary school system.

Among other concerns in the "instruction and curriculum development" area, the SSCPEA identifies the relationship between the desired curriculum and available time, physical facilities and personnel. In this connection a typical elementary school system would undoubtedly have established requirements which relate the contextual conditions of time, physical facilities and personnel to the goals of education. One such requirement would be established maximum and minimum values for the teacher-pupil ratio. To illustrate our methodology we have produced a procedural analysis of the relationship between possible contextual circumstance and hypothetical local procedures concerning the teacher-pupil ratio.

Figure 2 shows the result of the analysis. On the left of the diagram are a number of pertinent questions (shown as diamonds) which pertain to established preprogramed procedures. These represent the rule-following situations which might occur in connection with the requirement for maintaining proper teacher-pupil ratios in the face of various changes in pupil registration, teacher availability, classroom availability, and maintenance budget. As long as circumstances permit answers such that only questions on the left side are raised, only rule-following behavior is involved on the part of the principal in our typical elementary school system. While some of the questions in Figure 2 appear simple-minded or trivial, it is by means of a number of such small steps that a large complex question can be reduced to rule following. The other main part of the diagram (on the right side) depicts a decision situation which can become the problem of a principal in our school system if, as indicated in the figure circumstances provide certain answers to any one of four questions which mark points of departure from rule following to the decision situation. Once this decision situation is evoked, there are a number of possible alternative courses of action (shown as squares on the right side of the figure). Note that the availability of some of these requires certain answers to a set of prerequisites which are interposed between the box showing the alternative and the rectangle that identifies the decision situation. Finally, associated with each alternative is a list of possible considerations or consequences which might well serve as the basis of evaluation for each alternative .

Having inspected the results of the procedural analysis of the teacher-pupil ratio problem, let us now examine in more detail the considerations which led to the formulation of each part of the analysis. As an initial step we begin by stating the teacher-pupil ratio requirement as a question: "Are all classes, as presently constituted, within the established maximum and minimum for teacher-pupil ratio?" (See diamond numbered 1.0 in Figure 2.) Depending on particular circumstances, either a "yes" or a "no" could be appropriate, so both possibilities are indicated in the diagram by two paths leading from the question. Consider first the "yes" branch. If the principal determines that this requirement is being met, there is no problem and he should turn his attention to another curriculum requirement, e.g., "Are all state-and local-required subjects (for each grade level) part of existing curriculum plans and practice?" (2.0). In other words, the satisfaction of one requirement should lead to consideration of another until all are considered. Now let us return to the "no" branch. If the teacher-pupil ratio requirement is not being met, there are, logically speaking, either too few classes or too many. The next yes-no question (1.1) merely separates the two problems, since the ensuing analysis for each is different. This (1.1) is a "logical" question, included in our diagram for the sake of making the issue explicit. Normally one would expect the same information which yielded a "no" to the first question (1.0) to carry with it the answer to the second. Thus, in actual practice, the second question would probably never be independently formulated and answered.

Suppose the problem is "too many pupils" (the "yes" branch of it). Since it is the general policy to activate a new class in situations of this sort, we shall explore this possibility first. There may be a number of circumstances which could preclude this possibility. There may not be any available classroom space (1.2), there may not be any money in the budget for maintenance of a new classroom or hiring of additional teachers (1.4), or there may not be any new teachers available (1.5). An experienced principal would immediately know when any of these limiting conditions existed and consequently would recognize that he is faced with a genuine decision situation concerning the teacher-pupil ratio. On the other hand, knowing that there is available space, money and personnel for the creation of a new class, a principal might hire new teachers (1.6), activate the classroom (1.7), and reconstitute his classes (1.8). Unfortunately, this resolution of the situation may result in an embarrassment of riches, for having begun with too few teachers, he may be ending up with too many; obviously, we need to inject some foresight into the rule following routine by inserting the following consideration: "Will the creation of a new class result in a ratio of too few pupils per teacher for a given class?" (1.3). If the answer to this is "no" then the activation of a new class should follow, but if the answer is "yes" then this also leads to a decision situation. Since the character of the decision situation facing the principal might be different depending on which part of his rule-following routine failed, we have indicated each of these considerations as separate questions and have suggested an order in which they might be asked and answered. Clearly this order is somewhat arbitrary and is not meant to indicate the "order" in which a principal would or should ask these questions. It merely serves to complete the explication of the rule-following part of this decision area.

Now that we have listed the various questions implicit in the "too many pupils" part of the teacher-pupil ratio area, let us note that the "too few pupils" side of the question may contain its own rule-following and decision situations. A complete procedural analysis of this area would necessarily make them equally explicit. We will omit these results from our example for the sake of brevity, since they would not serve to illustrate new aspects of our methodology. Let us turn, instead, to the decision situation we have identified. Because the situation could have been evoked by several different circumstances, it is necessary to consider, in its resolution, alternative procedures generally appropriate to any of these circumstances. School policy and general experience suggest that if our analysis is correct, there are only five procedures (1.01, 1.02, 1.03, 1.04, and 1.05) which could be applicable to situations of this sort, and we shall discuss the situation as if this were the case. The fact that there may be procedures which have been overlooked is not important to the present discussion which is primarily to illustrate methodology. Of course, where the results are to be used for practical or research purposes, the completeness of the procedures represented is of central importance and effort must be expended to be as exhaustive as possible.

Although our set of alternative procedures may be generally applicable, not all of them will always be available. Furthermore, it would be an unusual situation indeed if they were also all equally desirable. Thus, the circumstances which affect both the availability and evaluation of the applicable alternatives must be included, if possible, in the procedural analysis. In facing this decision situation, a principal may first think of an alternative with very desirable consequences and then inquire into its availability; the analysis, however, reverses this procedure because it seems irrational to evaluate the consequences of an alternative if a failure to meet any of its prerequisites pre-empts its availability. To illustrate this point, consider the alternative "Lending students to another school" (1.02). This might be a very happy solution (especially if the principal can pick the students to be loaned and thereby satisfy other goals as well!) However, there are four conditions which must hold if this alternative is to be implemented: (1.021) there must be another school in physical proximity; given the existence of an adjoining school, (1.022) it must have the space and supporting facilities necessary to support the pupils if the transfer is effected; (1.023) there must be no existing district policy prohibiting such loan procedures; and (1.024) the budget of the loaning school must be able to support the necessary payments to the accepting system. Unless these prerequisites are met, evaluating the consequences of this alternative is not decision making; it is wishful thinking. (Note in passing that prerequisites in a procedural analysis are formulated as yes-no questions and constitute small rule-following sub-routines within the larger decision situation context.)

Assuming the availability of alternatives, we turn to matters of evaluation. With respect to consequences, it seems obvious that "no change in procedure" will have some undesirable results. At the very least, the teacher-pupil ratio criterion will not be met. On the other hand, there are some desirable features to the alternative because it can be implemented immediately and at no cost to the budget. When is this alternative really poor and when is it a satisfactory solution? In response our hypothetical principal will quickly assert that it is a matter of degree--it depends on how much pupil overage exists.

For instance, it is very unlikely that a combination of circumstances exists such that an overage that exceeds the criterion by just one pupil would be sufficient grounds for considering "no change in procedure" unsatisfactory. Granting this is the case, why not consider including these facts in the rule-following part of the decision area? There are two mitigating reasons. First, the proposed change is equivalent to merely raising the denominator of the teacher to pupil ratio by one. On the next iteration of the analysis we shall want to know whether or not just one more will make a difference and how many reiterations of this sort are permissible before absolutely no more additions are allowed. Therefore, since this process will have to reach a cut-off some time, it seems reasonable to accept the originally established ratio and treat degrees of variation as matters which must be left to the mature judgment of a decision maker as part of the evaluation of the consequences of an alternative. A second consideration which favors this mode of analysis is that there are generally other variables, besides the degree of overage, which may affect the decision. The caliber of teachers available, the ability level of the students, the grade level of the classes, budget factors, and parent reaction are illustrative of additional considerations to absolute class size which influence the desirability of the consequences of a given procedure. To insist on rule following in the face of these considerations is to impute more determinancy to the area than most recognized sets of procedure will support. In short, the analysis explicitly limits itself to specified procedure and does not attempt to convert even simply resolved decision situations into rule following unless this is sanctioned by formally standardized practice.

With this partial list of consequences we have illustrated the application of a procedural analysis to only a small part of one area of concern in educational administration. The illustration is, in itself, incomplete. In general it must be made more exhaustive in terms of the procedures considered, the contextual circumstances explored, and the set of educational goals evoked. At the very least, a complete listing of these factors and such larger systematic interrelationships as may exist among them would be required.

THE FIRO THEORY OF INTERPERSONAL BEHAVIOR

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The first section of this paper describes the elements of a formal scientific theory and the relevance of a formal theory to the field of educational administration. For this purpose, educational administration will be considered an applied science--one that makes use of the basic data from at least psychology, sociology, political science, and economics, adapting and applying these data to its particular situation.

In discussing formal theories, it will become evident that, in a strict sense, no theories of educational administration exist at present. Some authors have presented frameworks and terminology (e.g. Getzels and Guba, 1954; Stogdill, 1948), but no one has so far undertaken the systematic development of a formal theory. The second part of this paper is devoted to a discussion of an embryonic attempt to create a social science theory--the FIRO (Fundamental Interpersonal Relations Orientations) theory of interpersonal behavior. For a more detailed presentation of this material see Schutz (1958).

Formal Theory

In the literature of the philosophy of science and increasingly in the empirical sciences there are references to "formal systems," "axiomatic systems," "postulate systems," or, now somewhat more in vogue, "mathematical models" or simply "models." All these terms refer to attempts to construct a language from certain basic terms and laws governing the relations of these terms, that will "fit" a certain part of the world. That is, if these terms are given coordinating definitions (that is, connected with some empirical phenomena), then the phenomena will follow laws parallel to those in the model language. In other words, as scientists, we try to find the structure of reality and to put it into words. These words suggest consequences, which can then be checked empirically. A more detailed discussion of a formal system may help to clarify this point.

Elements of a Formal Theory

A formal theory consists of the following elements:

1. Basic or primitive terms.
2. Defined terms.
3. Formation rules.
4. Transformation rules (or rules of inference or deduction)
5. Postulates (or axioms, or primitive propositions)
6. Theorems (or derived propositions)

Normally, for application to empirical material the language of logic and mathematics is utilized without making it a part of the theory. This language includes the formation and transformation rules.

The primitive terms are not defined within the formal system but represent the minimal set of terms needed to develop the theory. Defined terms are introduced into the theory as equivalent to certain combinations of primitive terms. The postulates of the system are a minimal set of propositions from which all true statements in the logical system are derivable. The most familiar example of a formal system is Euclidean geometry. All the elements of a formal system are present: primitive terms, for example, "point"; defined terms, for example, "triangle"; axioms, for example, "If a straight line meets two straight lines, so as to make two interior angles on the same side of it taken together less than two right angles, these straight lines, being continually produced, shall at length meet on that side on which are the angles which are less than two right angles" (the famous "parallel postulate"); and rules for deducing the theorems from the axioms, for example, "If B is true whenever A is true, and A is true, then it follows that B is true (modus ponens)."

Presentation of scientific material in the framework of a formal system has many important advantages over more informal or discursive presentations, particularly with regard to the scientific utilization of the material. Some of these advantages are:

1. To achieve conceptual clarity. The necessity to state ideas explicitly leads to the identification of contradictions, omissions, repetitions, and confusions. Formalization fosters clear statements, explicit definitions, and clear logical sequences. For example, although the ideas of Harry Stack Sullivan (1954) are extremely provocative, it is difficult to find explicit statements in his work about several vital areas, for example, dimensions of personality.

2. To detect hidden assumptions. Formalization requires that all steps leading to the statement of a theorem be made explicit. If the chain of reasoning is incomplete, a hidden assumption may be revealed. For example, the fact that several social theories apply only to a particular culture is often not made explicit because of the range of applicability of the theory is not systematically stated.

3. To gain from indirect verification. If the relations between theorems are made explicit, then the verification of one theorem may indirectly verify the other because they are parts of a logically interconnected system. For example, in Newtonian mechanics, evidence for the laws of falling bodies gives indirect evidence for laws of movement of astronomical bodies since these sets of laws are logically connected.

4. To specify the range of conceptual relevance. Formalization makes clear which aspects of a theory are affected by particular data. It makes explicit which theorems follow from which postulates and therefore which theorems and postulates are affected by a particular experimental result. For example, because of the weak formal properties

of psychoanalytic theory, it is virtually impossible to tell how evidence refuting the mechanism of repression affects the theory of psychosexual development. More formalism would make explicit the postulates required to deduce the mechanism of repression and allow for comparison of such postulates with those required to deduce the theory of psychosexual development. The extent of the overlap of postulates would indicate the degree to which evidence for one idea is relevant to the other.

5. To identify equivalent theories and theorems. If theorems are explicitly stated in two theories, it is possible to see in what respects they are the same (that is, lead to the same consequences) and in what respects different (that is, lead to different consequences).

6. To achieve deductive fertility. By constructing a powerful set of postulates many theorems are derivable, and the derivations may be mechanically checked. Deductive fertility is probably the primary goal of a formal system, although, unfortunately, not one that can be achieved to a significant degree in any behavioral theory at the present time.

Formal Theories and Behavioral Science

It is not accidental that the most familiar example of an axiomatic formal system occurs in mathematics, a non-empirical science. In the empirical sciences there have been few attempts at formalization. A look into physics, the most highly developed science, reveals a remarkably small number of rigorously executed formal theories. McKinsey, Sugar, and Suppes (1953) have axiomatized particle mechanics for one example. In other sciences, this type of rigor has not even been approached.

Attempts at partial formalization have been made with great sophistication by Woodger (1939) in biology, and with less sophistication by Dodd (1942) in sociology and by Hull (1943) in psychology. Others, such as Freud (1949) and Parsons (1951) have referred to their systems of thought as theories, but they indicate no special concern about the formalism of their work.

Attempts at formalization have met with varying degrees of success; in fact, the effect of formalization, or lack of it, on the ultimate value of the work of these men is still unknown. Although it has been assumed that a formal theory is a desirable form for organizing knowledge, apparently application of formal theories to the behavioral sciences has been uninspiring. One is therefore inclined to ask to what extent this lack of success results from the nature of the data of behavioral science, and to what extent it can be attributed to our failure to apply the formal theories most fruitfully to these data.

The conceptual inelegance of behavioral science contrasts with the logical elegance of a formal theory. Serious scientific study of human behavior is of relatively recent origin, and the field is too vast and complex to submit to simple solution. Observed alongside the vagueness and ambiguity of the subject matter of interpersonal relations and administrative behavior, the formal system appears over-elaborate and perhaps inappropriate. However, the complexity of the subject matter need not mean that no use whatever can be made of formalization in the solution of empirical social science problems.

Perhaps a postulate system may be utilized profitably if it is considered the model toward which systematizing efforts are aimed, and it is realized that present attempts should not be expected to achieve the rigor required in a completely formal model. The formal system is an ideal to be successively approximated. (This is not to say that the formal approach supercedes other techniques, merely that it is a useful way of gaining certain values.)

The conception of the formal system as a model has several important consequences for the formulation and presentation of the theory to follow:

1. Primitive and defined terms are approximated by using terms that refer to observable and, if possible, measurable entities.

2. Postulates are approximated by attempting to formulate observed relations in as few propositions as possible.

3. Basic and defined terms are successively approximated by specifying the meaning of terms in such a way that the meaning is alterable through the introduction of empirical evidence. Relevant to this are the approaches to definition of Kaplan (1946) and the techniques of latent structure analysis (Lazarsfeld, 1954) and factor analysis (Thurstone, 1947).

Since formation and transformation rules are assumed, selection of the formal system as a model for presenting the FIRO theory calls for the presentation of primitive and defined terms and postulates. Introduction of the terms, as mentioned above, presents no special problem, but the postulate presentation merits further discussion. The model that seems most useful for introducing and describing the postulates is the rule of Bayes.

The Rule of Bayes. Postulates, though logically prior, are empirically very late in the sequence of theoretical development. In order to identify and develop postulates, a field of inquiry has to be so well researched that it is possible to discern the small number of important propositions from which all the others are derivable. In fact, this stage must be arrived at inductively by a process of successive approximations. Various hypotheses are proposed and tested, and some are confirmed. Gradually certain of these become applicable to a larger range of phenomena. They are then on the road to attaining the status of postulates.

The immediate problem, then, is to establish the truth of various propositions from empirical evidence and then to generate propositions that are even more general. This will be the technique whereby postulates are successively approximated. The most satisfactory formulation of the method of relating evidence of hypotheses, in my opinion, is given by the rule of Bayes.

Although postulates are by definition not proved within the system of which they are postulates, they may be very carefully and convincingly established outside the system. Indeed, for an empirical interpretation of a formal system it is regarded as a vast and complex (logical) argument. Its premises are the axioms, and its conclusion is the conjunction of all the theorems deduced (Copi, 1954). Hence, the premises, that is, the postulates must be true if the deductions are to be meaningfully true. This fact demonstrates the importance of establishing the truth of the postulates, or, more accurately, the truth of the theorems derived from the postulates.

The rule of Bayes asserts that the truth of a hypothesis is a function of:

1. The probability that the proposition is true, prior to testing it at a specific time, given all possible propositions and all the relevant knowledge available. This is called the antecedent probability.

2. The probability that a particular sort of evidence would occur if the proposition is true. We shall call this the evidential probability.

For example, prior to the Duke experiments (Rhine, 1937) the phenomenon of extrasensory perception (ESP) was highly improbable. That is, the proposition "ESP is a human property" had very little support from all that was known; in other words, it had low antecedent probability. Since that time many experiments have been performed to test this proposition, and many observers feel that the evidential probability is disturbingly high; that is, there are people who perform as the ESP hypothesis would predict.

The antecedent probability shall be called an argument for plausibility. To illustrate how this operates, Postulate 1 of the theory to be presented asserts that people have three interpersonal needs. A review of selected literature from the fields of parent-child relations, personality types, group behavior, and miscellaneous studies demonstrates that many investigators have independently concluded that these three are important variables. This review obviously does not prove or even confirm the theorems derived from the postulate, in a strict sense, nor is it so intended. The purpose of the review is to establish the antecedent probability, or plausibility, of the postulate; in other words, to demonstrate that it is reasonable in terms of what is already known in this field and does not do violence to existing knowledge or data.

In the presentation of the FIRO theory, attention is given to both antecedent probability and evidential probability for the theorems.

The FIRO Theory

The FIRO theory was developed to explain the field of interpersonal behavior. Its relevance to educational administration will be described in the following paper. The theory will be presented here as an illustration of the previous discussion, as well as for the content of the theory.

Range of the Theory

The phenomena which the theory is intended to cover are encompassed by the term "interpersonal." Briefly, behavior of people in which participants take account of one another is called interpersonal behavior. More specifically, interpersonal behavior encompasses three types of relations: (a) *prior*: relations between previous experience and present interpersonal behavior; (b) *present*: relations between elements of the interpersonal situation; and (c) *consequent*: relations between elements of the interpersonal situation and other behavior and attitudes.

Primitive Terms

These are the terms that are formally undefined within the theory, and from which all defined terms and postulates are formed. There are no logical requirements for the introduction of primitive terms, since they are undefined. However, the present system is an interpreted one; that is, the logical terms are given empirical meaning. Therefore the primitive terms must be made sufficiently clear to the reader.

An assumption underlying the selection of these terms as primitives, and of the definitions of the defined terms to follow, will now be made explicit. The assumption is that it is fruitful, with respect to the predictive and explanatory aim of this theory, to select *these specific* terms as primitive and to introduce *these particular* definitions for the defined terms. This assumption is important, because it specifies a possible source of inadequacy in the theory. If the theory does not predict well, it may be not only because of incorrect theorems and postulates but also because of a poor choice of definitions or of primitives.

The process of interpreting the primitive terms is called providing semantic rules. The primitive terms and their meanings follow:

1. *Interpersonal need.* A requirement for a person to establish a satisfactory relation between himself and other people. "Relation" refers to the amount of interchange between himself and others, and the degree to which he originates and receives behavior.

2. *Inclusion behavior* (I). Behavior directed toward the satisfaction of the interpersonal need for inclusion, the need to maintain and establish a satisfactory relation with people with respect to association. This term is used synonymously with *behavior in the area of control.* For individuals two aspects of inclusion behavior (e^I and w^I; see below) are measured by the test FIRO-B.

3. *Control behavior* (C). Behavior directed toward the satisfaction of the interpersonal need for control, the need to maintain and establish a satisfactory relation with people with respect to control and power. This term is used synonymously with *behavior in the area of control.* For individuals, two aspects of control behavior (e^C and w^C; see below) are measured by FIRO-B.

4. Affection behavior (A). Behavior directed toward the satisfaction of the interpersonal need for affection, the need to maintain and establish a satisfactory relation with people with respect to affection and love. This term is used synonymously with behavior in the area of affection. For individuals, two aspects of affection behavior (e^A and w^A; see below) are measured by FIRO-B.

For group interaction, behavior during any time interval may be described as behavior predominantly in one of the three interpersonal need areas; that is, either I, C, or A behavior. This behavior may be measured by the FIRO Content Questionnaire. Relations may also be described as occurring predominantly in a particular area depending on the most characteristic type of behavior required by the relation. For example, "sweetheart" may be considered predominantly an affectional relation; "officer-enlisted man," predominantly control; and "fraternity man-pledge," predominantly inclusion.

5. Expressed behavior (e). Actions taken by a person on his own initiative.

6. Wanted behavior (w). Behaviors from other people that a person feels will satisfy one of his interpersonal needs.

7. Goal achievement (g). Degree to which optimal performance toward a goal is achieved. The goal must be acknowledged by the group or individual as one it wishes to achieve. "Optimal performance" means, under the best possible circumstances, the maximal performance of which the group or individual is capable. Some examples of group goals are productivity (measured by specific criteria appropriate to the task), cohesion, and mutual liking (measured by responses to various types of sociometric questions, see Schutz, 1961).

8. Perceiver (()). The person who is perceiving a particular behavior. This may be the person doing the behaving, the target of the behavior, an outside observer such as another group member, or some person or persons specifically attempting to make a reliable, objective, repeatable observation. When appropriate to specify the observer, he will be placed in parentheses after the behavior is observed; for example, e_i^C (obs) means the control behavior expressed by person i as perceived by an observer.

These primitive terms are introduced for the purpose of forming the defined terms and postulates introduced in the next sections. In addition to the terms listed above, the theory assumes the language of logic, mathematics, and grammatical expression. These languages include such terms as "individual," "toward," "time," "statistical significance", and "correlation"; and logical signs, such as "and," "or," "not." If any term is used which has not been defined, it is to be understood in its usual meaning.

Defined Terms

These are terms useful for formulating postulates and theorems, which are defined by using only the primitive terms introduced and the logical languages assumed. Although they are all adequately defined by mathematical expressions, a brief description of each is provided.

Def. 1. Compatibility (K). Compatibility is a property of a relation between two or more persons, between an individual and a role, or between an individual and a task situation, that leads to mutual satisfaction of interpersonal needs and harmonious co-existence.

Def. 1a. Reciprocal compatibility (rK). Compatibility based on reciprocal need satisfaction. It measures the degree to which one person, i, expresses the behavior wanted by another person, j, and vice versa. It is primarily applicable to dyads--two-person groups. The rK is computed for each need area separately and can be expressed entirely in terms of the primitive terms expressed behavior (e), wanted behavior (w), and inclusion (I), control (C), and affection (A).

$$(1)\quad rK^I = \left|e_i^I - w_j^I\right| + \left|e_j^I - w_i^I\right|$$

$$(2)\quad rK^C = \left|e_i^C - w_j^C\right| + \left|e_j^C - w_i^C\right|$$

$$(3)\quad rK^A = \left|e_i^A - w_j^A\right| + \left|e_j^A - w_i^A\right|$$

where rK^I, rK^C, and rK^A = reciprocal compatibility in the areas of inclusion, control and affection

e_i^I, e_i^C, e_i^A = expressed behavior of individual i in the areas of inclusion, control, affection (subscripts indicating individuals or rK symbol are always assumed, for example, rK^A actually means rK_{ij}^A)

w_j^I, w_j^C, w_j^A = behavior individual j wants from others in the areas of inclusion, control, and affection

A low score indicates high compatibility for this and the following types of compatability.

Def. 1b. Originator compatibility (oK) is based on differences in tendencies to originate or initiate behavior. It measures the degree to which the preference of one person, i, initiating or receiving behavior complements this preference on the part of another person, j. If both prefer to initiate rather than receive, competitive incompatibility results. The condition where both prefer to receive rather than initiate is called apathetic incompatibility. The ideal situation occurs when the degree to which i wants to initiate is equal to the degree to which j wants to receive. In other words, for this type of compatibility it is assumed that "opposites attract." The oK is also computed separately for each need area and applies primarily to dyads.

$$(1)\ oK^{I} = (e_i^{\,I} - w_i^{\,I}) + (e_j^{\,I} - w_j^{\,I})$$

$$(2)\ oK^{C} = (e_i^{\,C} - w_i^{\,C}) + (e_j^{\,C} - w_j^{\,C})$$

$$(3)\ oK^{A} = (e_i^{\,A} - w_i^{\,A}) + (e_j^{\,A} - w_j^{\,A})$$

Def. 1c. Interchange compatibility (xK). Compatibility based on the desired amount of interchange of some type of interaction (contact, power, affection) between self and others. It measures the degree to which $\underline{i}$ and $\underline{j}$ like to relate in the same interpersonal atmosphere--specifically, if they like the same amount of contact and association with people (inclusion), the same amount of structure and authority (control), and the same amount of personal closeness and affection (affection). For this type of compatibility it is assumed that "birds of a feather" are compatible. It is more applicable for groups and "group atmospheres" than the other types of compatibility.

$$(1)\ xK^{I} = \left|(e_i^{\,I} + w_i^{\,I})\right| - \left|(e_j^{\,I} + w_j^{\,I})\right|$$

$$(2)\ xK^{C} = \left|(e_i^{\,C} + w_i^{\,C})\right| - \left|(e_j^{\,C} + w_j^{\,C})\right|$$

$$(3)\ xK^{A} = \left|(e_i^{\,A} + w_i^{\,A})\right| - \left|(e_j^{\,A} + w_j^{\,A})\right|$$

The next six definitions have not been used as yet in the application of the theory to educational administration. However, they will be presented as illustrative of the method of deriving concepts well known from other theoretical frameworks from the primitive terms presented here. It will be shown that it is possible to give these terms a very precise meaning, measurable by available instruments.

Def 2. Role definition. An objective observer's perception of the behavior that group members want from a role player and the behavior they express toward him. This definition may be accomplished using the primitive terms e, w, I, C, A, and perceiver.

$$\text{Role definition} = e_h^{\,I,C,A}(\text{obs}),\ w_h^{\,I,C,A}(\text{obs})$$

where h = other group members

obs = objective observer

Def. 3. Role expectation. A role player's perception of the behavior other group members want him to express in his role, and what behavior he perceives they express toward him.

$$\text{Role expectation} = e_h\ (\text{rol}),\ w_h\ (\text{rol})$$

where rol = role player

Def. 4. Enacted role. The behavior the role player expresses toward other group members, and the behavior he wants them to express toward him.

$$\text{Enacted role} = e_r\ (\text{obs}),\ w_r\ (\text{obs})$$

where r = role player

Def. 5. Perceived role performance. The role player's perception of his own expressed behavior toward other group members, and his perception of the behavior he wants from the group.

$$\text{Perceived Role Performance} = e_r(\text{rol}),\ w_r(\text{rol})$$

Def. 6. Norm. The behavior that members of a group want from any person who is a member of that group.

$$\text{Norm} = w_{h.a}(\text{obs})$$

where $w_{h.a}$ = behavior h wants from any group member a

Def. 7. Sanction. The behavior expressed by group members toward an expressed or wanted behavior of a particular group member.

$$\text{Sanction} = e_h(\text{obs}),\ \text{in response to } e_r(\text{obs}) \text{ or } w_r(\text{obs})$$

The six definitions above are summarized in the table below.

Explication of the Interpersonal Aspects of "Role," "Norm," and "Sanction"

		Perception of Role Player	Perception of Observer	
Behavior of Group	e_h w_h	Role expectation	Role definition	← Norm (for role player = average group member)
Behavior of Role Player	e_r w_r	Perceived role performance	Enacted role	← Sanction = response e_h to previous e_r, w_r

All values used for defining the above terms are derived from FIRO-B scales adapted to this purpose. Each definition consists of a set of numbers, representing scores on the appropriate FIRO-B scales. Definitions 2 through 7 are not required for the statement of the postulates to follow. However, they are important concepts used in the study of interpersonal relations that are expected to be useful for formulating new postulates for the system. It is helpful, too, to demonstrate the approach to conceptualizing situational factors from the standpoint of interpersonal behavior.

Postulates

Following are the propositions expressing the most fundamental ideas embodied in the theory. In the ideal instance all theorems in the system are derivable from these postulates. In the present instance, they represent the best estimate of the most basic ideas in the theory presented.

Postulate 1. The Postulate of Interpersonal Needs.

(a) Every individual has three interpersonal needs: inclusion, control, and affection.

(b) Inclusion, control, and affection constitute a sufficient set of areas of interpersonal behavior for the prediction and explanation of interpersonal phenomena.

This statement means that there are some important areas of interpersonal behavior for which failure to consider any of the interpersonal need areas leads to a poor correlation between prediction and outcome, and the addition of any further variables will yield an insignificant increment in predictive power.

Postulate 2. The Postulate of Relational Continuity. This postulate states the relation between interpersonal behavior in early childhood and interpersonal behavior in later situations through adulthood. The postulate includes:

(a) The assertion of a relation between these two behaviors that occurred at different times.

(b) The mechanisms through which this relational continuity operates.

(c) The degree to which these mechanisms are effective for different adulthood situations.

The basic situation can be stated in schematic terms. The child, who shall be called ego (E), observes the behavior or feelings of an individual (the actor, (A) toward another person (the target of the behavior, T). At a later time--for example, in adulthood--ego participates in another actor-to-target situation, either as actor or target. The hypotheses state the general relation between these two acts (actor to target).

For the following analysis, consider the carryover of behavior from early childhood (time 1) to the present adulthood stage in which the behavior under study is occurring (time 5). (This leaves intervening time periods--later childhood, adolescence, young adulthood--for later study.)

The basic relational continuity situation:

$$(A_1 \longrightarrow T_1) \xrightarrow[p]{} (A_5 \longrightarrow T_5)$$

where A = actor
$\longrightarrow$ = behaves or feels toward
T = target
$\xrightarrow[p]{}$ = implies with probability p
and subscripts 1 and 6 indicate time periods of early childhood and adulthood, respectively.

There is a positive correlation between behavior and feelings in the childhood situation and the appropriate adulthood situation in the areas of inclusion, control, and affection. The mechanisms through which this condition operates are:

Transference. $(E_1 \longrightarrow T_1) \xrightarrow[p]{} (E_5 \longrightarrow T_5)$. Ego behaves/feels toward a target in childhood and behaves/feels similarly toward a target in adulthood.

For example, a child feels exploited and manipulated by his father, and when he becomes a teacher he has similar feelings toward his principal and superintendent.

In perceptual transference, actor and target are observed by ego during childhood and ego observes the same relation in adulthood. This mechanism refers to a determinant of perception, stating essentially that, given an adult relation, a person will tend to see that relation, in part, in terms of his previous experience with such relations.

For example, if his father tended to ignore a younger sister and felt that she was unimportant, a person may tend to perceive principals' orientation toward teachers as ignoring and as feeling that teachers are insignificant. This is a transference of perception rather than of behavior and feelings as in the previous situation.

Impact Identification. $(A_1 \longrightarrow E_1) \xrightarrow[p]{} (E_5 \longrightarrow T_5)$. Ego is behaved/felt toward by an actor in childhood and behaves/feels similarly toward a target in adulthood. Impact identification means that ego has participated in the childhood interaction—that is he *is* T_1.

For example, a father acts in an authoritarian manner toward his son, and the son, when he becomes a superintendent, acts in an authoritarian manner toward his principals.

Vicarious Identification. $(A_1 \longrightarrow T_1) \xrightarrow[p]{} (E_5 \longrightarrow T_5$.) Ego has observed two others in interaction (he is neither A_1 nor T_1) and has identified with the actor.

For example, he identifies with his father's treatment of his mother and behaves, as an adult principal, toward his female teachers as his father did toward his mother.

Impact Elicitation. $(A_1 \longrightarrow E_1) \xrightarrow[p]{} (A_5 \longrightarrow E_5)$. Ego is behaved/felt toward in childhood in a certain way and elicits the same behavior from others when he becomes an adult.

For example, his older brother makes fun of his competence and doesn't take him seriously. When he becomes a principal, he acts in such a way that his superiors also treat him this way. There is continuity in the type of behavior he elicits from other people.

Vicarious Elicitation. $(A_1 \longrightarrow T_1) \xrightarrow[p]{} (A_5 \longrightarrow E_5)$. Similar to the other vicarious situations, this mechanism operates by virtue of an observation in childhood of a two-person relation not involving ego, in which ego identifies with the target and later elicits the same behavior as the target.

For example, he sees his father as the recipient of the abuse from his mother, and he, as superintendent, gets into the position of eliciting abuse from school board members, community leaders, and parents.

In summary, the primary mechanisms through which relational continuity is maintained are transference, identification, and elicitation, meaning, respectively, that a person continues to act and feel toward others as he did toward early childhood figures, that he relates to others as he was related to as a child, and that he continues to elicit from people the same behavior and feelings he did as a child. These mechanisms could have resulted either through personal impact or vicariously through observation of the original childhood relations.

Postulate 3. The Postulate of Compatibility. If the compatibility of one group, h, is greater thatn that of another group, m, then the goal achievement of h will exceed that of m.

In mathematical terms this postulate is stated:

$$\text{If } K_h > K_m, \text{ then } g_h > g_m.$$

The definition of compatibility introduced earlier is fully utilized in this postulate.

Also used in the statement of the postulate is the definition of "goal achievement." This term was defined as the degree to which the group approaches its optimal performance on a goal it desires to achieve. Several theorems specify and elaborate various aspects of the postulate.

Theorem 3-1. If the compatibility of one dyad (two-person group), y_1, is greater than the compatibility of another dyad, y_2, then the members of y_1 are more likely to prefer each other for continued personal interchange.

Theorem 3-2. If the compatibility of one group, h, is greater than the compatibility of another group, m, then the productivity and goal achievement of h will exceed that of m.

Theorem 3-3. If the compatibility of one group, h, is greater than the compatibility of another group, m, then h will be more cohesive than m.

Theorem 3-4. The effect of compatibility on productivity (the C-P effect) increases as the task situation requires more interchange in in the three need areas.

Postulate 4. The Postulate of Group Development. The formation and development of two or more people into an interpersonal relation (that is, a group) always proceeds in the same sequence, as follows:

Principle of group integration. For the time period starting with the group's beginning until three intervals before the group's termination, the predominant area of interpersonal behavior begins with inclusion, is followed by control, and finally by affection. This cycle may recur.

Principle of group resolution. The last three intervals prior to a group's anticipated termination follow the opposite sequence in that the predominant area of interpersonal behavior is first affection, then control, and finally inclusion.

(For a mathematical specification of this postulate, see Schutz, 1958, p. 199.)

One important theorem is derived by combining this postulate with that of compatibility. This theorem states that the compatibility of a relation as it develops depends on a combination of interpersonal area compatibility and the duration of the relation.

Theorem. Compatibility development.

(a) If a group is high on inclusion compatibility (K^I) but low on K^C and K^A, groups member will be most compatible during the initial stages of their relation.

(b) If a group is high on K^C but low on K^I and K^A, group members will be most compatible during the middle stages of their relation.

(c) If a group is high on K^A but low on K^I and K^C, group members will be most compatible during the last stages of their relation prior to the separation sequence.

Postulate 5. The Postulate of Interpersonal Symbolism. People behave toward environmental conditions in terms of the interpersonal meanings of these conditions. That is, each significant environmental element is acted toward as if it were a symbolic projection of an element of the interpersonal situation.

Since this postulate is not described in FIRO, it will be discussed in more detail here. A central tenet of the FIRO theory is that human behavior can be understood by reference to two sets of factors: physiological and interpersonal. The above postulate asserts that the environmental factors that appear to influence behavior--factors grouped under such terms as political, economic, historical, and cultural--are not basically different from interpersonal factors. When these elements are grouped under these forbidding titles, they seem to add immense complication to the problem of behavioral prediction. However, this postulate implies that on closer look, factors like these can be reduced to interpersonal factors and can thereby be treated by the techniques discussed in FIRO, especially those referring to compatibility where, in this case, the compatibility is between people and environmental conditions. Some examples of the interpersonal characteristics of various environmental factors follow.

One of man's universal problems is relating to nature. Following the postulate of interpersonal symbolism, nature is symbolized as another person, and men attempt to relate to it in the three need areas.

For inclusion, man must find his relation to the natural forces of the universe. Is he a member or not? Is he significant or an unimportant speck in the perspective of time? Is it possible to form a unity with nature, a oneness that will make them both members of the same whole? Inquiries of this type have been in existence for centuries, to the point where institutions have arisen to explore for answers. These institutions are generally called metaphysics or religion.

For control, man must establish a relation of optimal control and mastery with the forces of nature. To accomplish this he must investigate these forces in order to understand them so that they are predictable and ultimately controllable. Man is engaged in a constant struggle to survive and conquer the forces of nature that threaten him or that can be turned to his use. When this activity becomes organized, it is usually called science and engineering.

For affection, man must establish his optimal relation with nature with regard to emotional closeness. He attempts to appreciate and enhance nature as he does a love object. While in inclusion the relation is relatively impersonal and looks on the universe as vast and complex, in affection nature is regarded as a single being with whom the individual relates. As with a love object, the ultimate aim is emotional union, appreciating, enhancing and improving nature, while at the same time giving up parts of one's self to harmonize and unite with nature. The direct, personal, emotional expressions are usually called artistic. Art may be considered an attempt at enhancing and harmonizing with natural forces. Perhaps architecture is the clearest expression of this sort, where the artist through his creation attempts to enhance the surrounding natural properties while at the same time drawing from nature to enhance himself through his product. The parallel to the love relation seems clear.

Thus, religion is concerned with the relation of man to the universe in the sense of belonging, or inclusion; science is concerned with man's mastery of the universe in the sense of control; and art is concerned with emotional closeness to the universe in the sense of affection.

As in all cases of this type of categorizing, it is needless to say that these institutions are not pure types, simply that the emphases seem to fit.

Any attempt to understand the meaning of religion, science or art for those engaged in those pursuits should take into account this interpersonal symbolism. For example, this analysis would suggest that people in religious fields would have more concern over problems of belonging, marginal roles in society and generally, in our society, would be concerned with problems of in-or-out. Perhaps the large number of sects alienated from the bulk of society is a case in point.

Scientists would tend to be more competitive and regard a wide variety of situations as challenges to be overcome. The great interest of many scientists in all types of games and puzzles . is relevant to this point.

The artist would tend to eroticize situations and be more concerned interpersonally with sexual and affective relations. The apparently vigorous sexual activity of artistic colonies would appear to lend weight to this conjecture.

In other words, the above considerations imply that the religionists, scientists and artists not only view nature as a personal symbol, but also view people in the same way. The postulate additionally asserts that attitudes toward abstract ideas are also consistent with orientations toward people. For example, a person's educational values relate to his orientations toward people. This notion is pursued in the following paper.

Summary of Theory

There are three interpersonal need areas--inclusion, control, and affection--sufficient for the prediction of interpersonal behavior. Orientations which an individual acquires toward behavior in these areas are relatively invariant over time. Compatibility of two or more persons depends on (a) their ability to satisfy reciprocally each other's interpersonal needs; (b) their complementarity with respect to originating and receiving behavior in each need area; and (c) their similarity with respect to the amount of interchange they desire with other people in each need area. "Roles" may be defined in terms of interpersonal requirements in such a way that a measurement can be made of the compatibility of an individual and a role. Compatibility varies with the type of interaction being experienced. If, for example, individuals are engaged in inclusion behavior or involved in a primarily inclusion relation, then compatibility in the inclusion area (K^I) is the most important determinant of their compatibility in the situation itself. Areas and degrees of compatibility are therefore distinguishable which are roughly comparable to personal relations that flourish under one set of circumstances but cannot withstand the stress of a different type of relation.

Every interpersonal relation follows the same general developmental sequence. It starts with inclusion behavior, is followed by control behavior, and finally affection behavior. This cycle may recur. When the relation approaches termination, it reverses direction, and investment in the relation is withdrawn in the order affection, control, and inclusion. Finally, people relate to inanimate objects and abstract ideas much as they do toward people.

From these postulates it is theoretically possible to predict the course of a relation if we know the interpersonal orientations of the individual members of the relation and the interpersonal description of the circumstances under which they will interact.

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ROLE PERCEPTION AND FULFILLMENT IN RESEARCH

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The title of this paper suggests a consideration of strategy concerning the conditions that make creative work possible. Can the scientist do anything in the way of analyzing and structuring the perception of his role that will facilitate the development of his field of inquiry? I believe that an affirmative answer can be given. But I do not believe that any one formula will be valid for all scientists. We do not all work alike. What I have to say represents only one man's speculations, which may have no value except, perhaps, to suggest some of the problems that merit consideration in the struggle for insight into the nature of the scientist's problems.

We tend to orient ourselves toward, and work to accomplish, the goals that we set for ourselves. We also tend to behave in accordance with our perceptions of our roles. In other words, performance is highly determined by our own expectations and by our perception of the expectations of others toward us. These two sets of expectations set limits and boundaries on role performance. If we wish to fulfill our creative aspirations, then it would seem desirable to define our roles carefully, making certain that the boundaries are set out far enough to provide not only full scope for achievement, but some challenge as well.

In order to make useful progress, we need to consider two aspects of the problem of role definition. First, what are the factors that have contributed to deficient role definition and inferior performance? Second, what factors might contribute to a more adequate definition? A bit of historical perspective might assist in providing an answer to the first question.

At the beginning of the present century, the subject matter that we now regard as belonging in the social sciences was treated essentially as a branch of philosophy. There was a wealth of speculation and theory presented as truth, but with little empirical evidence to support it. The American pragmatists strongly challenged all theories based solely upon the convictions and pronouncements of their originators. Empirical proof was demanded. By the end of World War I, many American universities had established departments of psychology, education, sociology, economics, and political science. Many of the originators of these departments were either students of, or were strongly influenced by, the pragmatic philosophers. They initiated a double barrelled campaign. On one hand, they rejected the old authoritative theories and warned against the dangers of all theorizing. On the other hand, they began empirical research and the development of technique and methodology. Now let us see what impact these two developments have had upon role definition in our various professions.

One of the strongest effects of the pragmatic doctrine has been that we have come to regard ourselves as technicians, not as scientists. We are reluctant, if not embarrassed, to refer to ourselves as scientists. This is evidence of sound insight, for we have in fact defined our role as that of technician; not scientist. Correlative with this definition, we have concerned ourselves with the technologies for doing research; not with scientific method.

We cannot do research without technique. But technique without system is of little avail in the development of a science. Our pursuit of technique has led us through a complex maze that has few payoff boxes, but numerous dead ends. Let us examine some of the techniques and concepts that have contributed to this situation.

We have committed ourselves to the role of technician by our dedication to statistics. We seek to obtain statistically significant results. Our professions have produced tens of thousands of volumes - books and journals - full of statistically significant findings, most unrelated to any other, and in such isolation as to be of only trivial scientific import. In fact, the development of knowledge in our professions can be measured in increments of triviality. And this triviality can be attributed, in part, to our concern with significance rather than with system or theory.

Intimately related to the degenerative effects of our concern with statistical significance is the recent cult of the hypothesis in the design of experiments. Hypothesis, as we use it, is seldom concerned with the operations of systems of concepts and the outcomes generated by such operations. Our hypothesis is likely to be concerned with the presences of a characteristic in one or more samples. After we have failed to reject the null hypotheses at the .01 level of significance, we know essentially nothing at all. We have produced another statistically significant finding that stands alone.

We tend to equate hypothesis with theory. Failure to reject the null hypothesis is assumed to lend support to a theory. But as we use the term, hypothesis has little to do with theory. In testing a theory, hypothesis must state the operational relationships that exist between the concepts of a theoretical system. In terms of this specification our professions have produced very few theories of more than trivial import.

The criterion is a concept that has makeshift utility in applied research. But its use constitutes an admission that no systematic theory is involved. A theory states a defined set of operational relationships between concepts all of which are of equal necessity to the system. The capacity of a test to predict a criterion may have much practical utility, but increase our understanding of the matter not at all.

We have not exhausted the list of factors contributing to a role definition that has involved us in several decades of technical hackwork. But we need not pile gloom upon gloom. The factors discussed are representative of the lot. We need to be aware of them if we are to do an effective job of restructuring our roles.

But before we undertake the task of reconstruction, let me state that I am not advocating the abandonment of statistics, hypothesis, or any of the technologies of research. I am suggesting that these technologies might be diligently applied century after century without ever producing a science.

As a sign that I am not in total despair regarding our situation, I should like to make use of a rather well documented set of findings produced by our researchers. These findings suggest that a group member's performance is likely to be more effective and his satisfaction higher if his role is clearly defined, but not so highly structured as to restrict him in the execution of his task requirements. Drawing upon these findings, let us define our role broadly, with adequate scope for creative work. We can best begin with a statement of function.

It is the function of the scientist to develop logically structured and empirically validated systems of statements (hypotheses) about the nature of things. This definition requires us to concern ourselves first with theory and scientific method; second with research techniques. It requires us to regard theories, not as useful sources of testable hypotheses, but as sets of interrelated hypotheses that must satisfy the tests of logical consistency and empirical validity. The tests apply to systems; not merely to hypotheses. It is not sufficient to demonstrate the statistical validity of each hypothesis separately. It is necessary also to demonstrate that the total set of empirically validated hypotheses constitutes a logically coherent system. Only such a system permits interpredictability among the component hypotheses. Lacking interpredictability, hypotheses are comparatively weak and add little to systematic knowledge.

I shall hear protests from those of our colleagues in various professions who argue that the scientific method as developed for the physical sciences is not applicable to the social sciences - that the social sciences must develop their own special body of method, principle, and techniques. This dogma if perpetuated is capable of bringing about the downfall of all that is now regarded as science. I choose to believe that there are many learned professions each with its own specialized technologies, but that there is only one science. It is a way of life, open to all who are willing and able to master its discipline. It resides not so much in books and institutions as in the behavior and thinking of men who submit themselves to the discipline that it imposes. It derives from the definition of role rather than from the subject of inquiry. It is a creation of man designed to control his role performance in the search for understanding. As man himself becomes an object of research, the application of this control becomes a matter of most critical importance. Without this control, speculation and inquiry are as likely to generate superstition as valid knowledge.

Let us redefine our task as that of building systems. There is nothing that we can understand in any final or absolute sense. We have no obligation to discover truth. We increase our understand in any final or absolute sense. We have no obligation to discover truth. We increase our understanding by demonstrating that orderly and predictable interrelation ships exist between the elements of a system. Our task is that of discovering systematic relationships.

The scientist is concerned with three sets of systems. First, is the theoretical system. Second, is the system of real events that the scientist seeks to describe in terms of his theory. Third, is the system of measurement by means of which the scientist seeks to demonstrate an exact parallelism between the structure of the theoretical system and the structure of the mathematical system used in measurement. A theory may be regarded as a system consisting of a set of concepts, and a set of hypotheses (or formulas) which specify the interrelationships between the concepts, at least one of which is an outcome concept. The set of hypotheses predicts the relationships expected to be found in the system of measurement applied to the events observed in empirical research.

The scientific method is concerned with two parallelisms. One is the parallelism between a theoretical system and a mathematical system. The other is the parallelism between the mathematical system and a set of real events. Measurement does not overcome these parallelisms, or connect theory with reality. It provides only a test of parallelisms. But this parallelism can be made close enough to yield great power for prediction and control.

Let us examine the three systems separately. A theory, as developed by the physicist, usually consists of a set of alphabetical symbols and an equivalence sign . The equality sign expresses an equivalence between two subsets of the system - an input subset and an output subset. This equation expresses the most general form of the system. Usually, it is possible to break down each symbol into a statement of equivalence between the symbol and a subset of component symbols. When analyzed by the methods of formal logic, the total system of subsets, and each subset separately, must exhibit internal consistency.

As an example of a system that has been thoroughly tested for empirical validity and logical consistency, let us consider the following equations. They represent a classical statement of theory of electricity.

$$I = \frac{Q}{t}$$

$$V = RI$$

$$R = \frac{V}{I}$$

$$K = \frac{1}{R} = \frac{I}{V}$$

It is apparent that no one of the variables in the system can be regarded as constituting a fixed criterion. The variables can be operated on in varying combinations to generate outputs. The validity of the system is tested in terms of its operations.

Modern measurement theory was stated as a formal system by Helmholtz (1). For a recent discussion, I recommend the papers edited by Churchman and Ratoosh (2). A system of measurement must conform to the laws of mathematical group theory, or set theory. We usually think of measurement as the act of applying a ruler, micrometer, or some other device to the subject being observed; and as making a check mark or reading a calibrated scale for an indication of magnitude. Then we write down a number and feel assured that we have completed the act of measurement. Of course, we may repeat the act in order to determine the reliability of measurement. What we have actually done is to record an observation. The number written down is not a characteristic of the thing observed. It is a concept applied to an observation. The difficulty is not overcome when we use a mechanical device to substitute for us in making observations and reading and recording the calibrations. This recourse may reduce the error of observation. Often it is the only access to observation. But the numbers we apply to the observations are our own invention. Truly, they are a most useful invention, for numbers can be substituted for the symbols that represent our statement of theory. When operated upon according to the rules of mathematics, this numerical system should satisfy the equation hypothesized in theory, and should also conform to the laws of mathematical set theory. In other words, the mathematical system must be logically consistent. Both the system of theoretical concepts and the system of measurement must exhibit logical structure in order for us to assume a correspondence between the two.

We live in, and are part of, a structured universe of real events. At least, such structure is implied in a statement of theory. The system of measurement implies a correlative assumption of structure. The number system appears to have developed as a means of counting, dividing, combining, and otherwise operating upon objects. It has been developed in such a manner as to represent a very precise accounting of such operations. In fact, the precision is so close that unless the system of measurement conforms to the laws of mathematical set theory, it will not represent a valid accounting of the structure of real events.

The statement is frequently heard that only the physical sciences describe an algebraic universe--that the social sciences are confined to the study of a statistical universe. This smug assumption implies that man is exempt from any regularities to be found in the physical universe. Should we dare entertain the abhorrent thought that human beings, individually and in groups, may behave in accordance with certain invariant laws such as describe other systems of matter, we might make considerable progress in our research. The endlessly repeated difficulties suffered by human societies do not appear to be described accurately by the laws of chance events. Civilized societies no longer stone to death those of their members who perceive order and system in the trend of human affairs, but dispose of them by the marshalling of authoritative opinions.

The progress of science in any area of professional inquiry is closely related to the refinement of methods for observation and measurement. But as a rule, we can observe and measure with precision only when we know what we intend to observe. In other words, conceptualization precedes measurement. Unless observation is guided by a system of logically related concepts, research can do little more than accumulate a mass of empirical data that contribute little to understanding. We have to develop theories before we can test them.

The scientific method applies only to the testing of theories. It specifies no rules for building theories or making discoveries. There remains, then, wide scope for creative work in conceptualization, analysis, and systematization. Conceptualization precedes hypothesis and measurement. Ideally, conceptualization should be closely related to empirical findings and to the idea of measurement. But we cannot be bound to the body of empirical findings available to us. It seems not improbably that a scientist with the analytic and integrative capacity of a Kepler or Mendeleeff might be able to perceive structure and system in the disordered oddments of data produced by our research. But we must also consider the possibility of such serious omissions in the empirical data that the perception of structure is not now possible. Whatever the case, we have a challenge and an enduring task.

In closing, I should like to make clear that it has not been my intention to imply that applied research and technology are without value. Applied research is necessary in developing new methods, evaluating practice, and diagnosing and solving problems. These are essential and respectable research activities. In newly developed areas of science, major proportions of time must be devoted to the development of method and technique. My argument is this--that we should not design all our research as if it were applied research. We can not depend upon the summation of empirical data obtained in applied research to increase our knowledge in any sound or reliable manner. We can have no valid conception of the implications or the limitations of empirical data, except as they are examined and tested in the light of system. For this reason, we should strive to advance from technology to science in the research projects that are designed to test hypotheses rather than solve practical problems.

Satisfying role fulfillment, I believe, depends upon our assumption of the responsibilities of the scientist rather than those of the research technician. Our primary function becomes that of theory building. But theory must be strictly formulated with regard for its testability in empirical research. In view of our training, we are not likely to neglect the empirical test. The task of the scientist as we have defined it appears to be a formidable one. Indeed it is. But basically, it is not more difficult than that confronting us with any inadequate definition of role. Our colleagues in those professions that study the hardware of the universe have found it profitable to define their role as that of scientist. If we hope to make comparable progress in the study of human behavior, we must define our role in terms that make such progress possible.

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SECTION III

Methodological Considerations

A PICTURE OF RESEARCH AS REFLECTED IN PROPOSALS SUBMITTED TO THE COOPERATIVE RESEARCH PROGRAM

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A statement of fact prompts the picture of research presented in this paper: seventy per cent of the proposals submitted to the Cooperative Research Program are not recommended for support by the Research Advisory Committee. In pondering such a statement one is led inevitably to the question of what is wrong with these proposals that makes them unacceptable to the Committee. The purpose of this paper is to provide at least a partial answer to this question. I am aware that there are many researchers who believe the key to this percentage lies with the Committee rather than with the proposals, but I have chosen to examine the sanctity of the latter rather than the sanity of the former. Of course, if the null hypothesis that there are no weaknesses in the proposals is confirmed, we shall know at least in which direction to proceed.

I will acknowledge at this point that such a distinguished group as the one gathered here today has only an academic interest in the reasons why proposals are not recommended by the Research Advisory Committee, but you may be called upon sometime to explain to a colleague why his proposal was not recommended, and so this presentation should not be entirely wasted. If there is someone here who has submitted a proposal which was not recommended--through a glaring error, of course, on the part of the Committee--I want to assure you that in my illustrations I will always refer to the faults of the other fellow's proposal.

Research Methods

During discussions with researchers whose proposals have not been recommended for support, the accusation is usually made that the Committee favors particular research methods over others. To obtain evidence on this point, the 675 proposals which were reviewed by the Committee in fiscal years 1958, 1959, and 1960 were classified into six research methods which have been labeled (1) experimental, (2) descriptive, (3) correlative, (4) instrument development, (5) miscellaneous, and (6) action-research. Each of the categories represents the following percentage of the total:

Experimental	Descriptive	Correlative	Inst. Develop.	Misc.	Action-Research	TOTAL
26%	38%	19%	7%	6%	4%	100%

A brief discussion of these methods will orient us to the particular meaning attached to each. The experimental method, as it is defined here, is rather broadly used to include both laboratory and classroom situations. In its simplest form it involves the application of one treatment to one group and a different treatment to a control group. Tests are administered before and after the treatments are applied to determine the differential effects of the treatments. The descriptive study probably covers the broadest range of any of the methodological groups. It includes the questionnaire survey, the developmental study, the historical study, the case study, and other types of status investigations. The correlative study has two subtypes. The first attempts to predict the probable occurrence of some future phenomenon from data gathered prior to the occurrence of the phenomenon. A study which attempts to predict a student's success in college from achievement and personality measures obtained in high school is an example of this subtype. The second subtype deals with the relationships that exist among a variety of variables. A study of the factors associated with the retention of students in college and one of the relationships between certain life history items and age changes in mental abilities are examples of this subtype. The construction of scales, tests, and other instruments and techniques which are necessary to the furtherance of educational research are representative of the fourth method. Included also in this type are studies of norming and the revision of present instruments. The miscellaneous research category also includes two subtypes. When a study consisted of two or more discrete phases and each phase made use of a different method, it was classified in this category. Studies involving theory development and other methods which could not clearly be placed in one of the aforementioned categories were also classified in this group.

The action-research category may be somewhat confusing because the phrase has taken on a peculiar meaning of its own in educational literature. In this paper the words action and research are joined by a hyphen to denote that both of these aspects are intermingled in the proposal. That the research aspects of most of the proposals classified in this category are subordinate to the action elements is illustrated by the relatively low recommendation rate of such proposals which I shall read in just a moment.

The recommendation rate for each methodological group is as follows:

Experimental	Descriptive	Correlative	Instrument Development	Miscellaneous Research	Action Research	Overall
30%	26%	35%	29%	29%	10%	30%

You may have noted as I read these percentages that except for the action-research category, the recommendation rates do not vary more than 5 percentage points from the overall rate of 30%. It seems reasonable to conclude from this that the Committee does not show undue favoritism toward any of the methods represented by the first five categories. The action-research category does not fare as well, but one should not conclude from its low recommendation rate that the activities suggested by such proposals are not worthwhile endeavors for professional people to engage in. Rather the low rate should be interpreted as a reflection of the Committee's and the staff's viewpoint that the Cooperative Research Program have a research emphasis.

Two conclusions should be highlighted in summarizing this section:

1. Seventy percent of the proposals submitted to the Cooperative Research Program are unacceptable to the Research Advisory Committee.
2. The unacceptability of the proposals does not appear to be a function of the research method to be employed by the investigator.

Criteria of Evaluation

Some clues to what is wrong with the proposal that is not recommended for support will be provided by our examination of the four criteria which the Committee employs in evaluating each proposal.

Significance of the Problem for Education

The first criterion is the significance of the problem for education. It is apparent from the Committee's reactions to proposals that they view some problems as central to the field of education and others as peripheral. Studies which explore the learning processes, which describe the characteristics of effective administrators or which seek to identify factors associated with the retention of students in schools and colleges are seen as having greater significance for the field of education, than, for example, the adjustment problems of young adults. This does not necessarily mean that the adjustment problems of young adults is not a valuable topic for research. In fact, viewed in the context of mental health, the adjustment problems of young adults takes on greater significance, perhaps, than the retention of students in high school. The point is clear, however, that the Committee must make a judgment about the significance of each problem for the field of education.

Soundness of the Research Design

The second criterion deals with the soundness of the research design. Since weaknesses in the research design will be covered in a later section of this paper, I will pass over a discussion of them at this time.

Personnel and Facilities Available to Conduct the Research

In applying the third criterion, the adequacy of the personnel and facilities available to conduct the research, the Committee generally gives the benefit of the doubt to the initiator of the proposal, except in one instance. When an investigator attempts a study for which he apparently has had little or no experience or training, the Committee is apt to question the person's qualifications. This is especially true when the problem posed calls for a highly technical skill. Suppose, for instance, that an individual proposed to develop a new measure of mental ability to be used with preschool children, but his background indicates little or no experience in instrument construction, and perhaps little experience in working with children at this age level. The Committee probably would hesitate to recommend such a proposal for support unless other features, such as, a very strong research design and appropriate consultant help were indicated to counter balance the inexperience . The point should also be made, however, that the Committee has often "bet" on a relatively young and unknown researcher because his proposal represented an imaginative approach to a problem.

Economic Efficiency of the Investigations

The economic efficiency of the project is a fourth criterion which the Committee considers in its evaluation. The total cost of the study is but one aspect of its economic efficiency. The word efficiency is a key word since it suggests a relationship between cost and some measure of production. The question then is whether the results which are likely to be produced are sufficient to justify the cost.

Weaknesses in the Proposals

The proposal that is not recommended by the Research Advisory Committee invariably has weaknesses in the development of the problem, the statement of the objectives, hypotheses, or questions, or the description of the procedures. The remainder of this paper is devoted to some of the most frequent and serious inadequacies that occur.

The problem is trivial or unrelated to educational research.

The trivial problem occurs more frequently than one might expect, but it is difficult to recognize in each of its guises. I think that most of us would readily agree that an adult education program for library trustees can be indicted on several counts. Not only is it a peripheral value to education and oriented toward action rather than research, but it is, to put it bluntly, a problem of little significance. The occurrence of this easily recognized form of triviality is reasonably rare, but there is a more subtle variety which deserves our attention. I have in mind a proposal which deals with the role of the guidance counselor in secondary schools. It appears at first glance to be quite significant, and there is no question about its place within the field of education. A closer scrutiny, however, reveals an approach which lacks imagination and insight and which holds little promise of advancing our knowledge in this field. The study seeks to determine the way in which a counselor spends his time, but only the obvious questions are raised:

1. What proportion of assigned guidance time is spent in counseling?

2. What proportion in group procedures?

3. What proportion in student appraisal?

In many cases the questions are not even correlative so that a great deal of overlap would occur in the percentages reported. What does the investigator have when he is all through? He has a very misleading and oversimplified picture of the job of the secondary school counselor.

Knowledge about the role of the counselor can hardly be considered trivial. It becomes so when the problem is cast in superficial terms.

The adjustment problems of young adults has already been used to illustrate a problem which is only peripherally related to education. An interesting proposal on alcoholism in college students was submitted not long ago, and the Committee decided that it was not central to the field of education. I have deliberately cited proposals which might have been supported had the problems been of sufficient significance for the field of education.

The problem is not delimited.

Most of us are familiar with Good and Scates' classic illustration of this weakness. The reference to which I allude is cited in Methods of Research and describes a letter which was written by a graduate student to the Commissioner of Education for Alaska. The letter indicates that the student had selected for his thesis the topic, "The Teaching of English as Revealed in the Courses of Study of the Countries of the English-Speaking Nations of the World." In the second paragraph he asks the Commissioner, "Do you know some interesting books on Alaska: her history, her economic problems, commerce, imports, exports, human relations, religion, etc...."

That this difficulty occurs quite frequently in the research efforts of graduate students should not blind us to the [illegible] that it is also one of the most frequent difficulties encountered in proposals submitted to the Cooperative Research Program. Unfortunately, or perhaps I should say, fortunately, we do not have an illustration from the Program proposals that is as colorful as the one from Good and Scates, but we will make do with what we have. One proposal received by the Program posed the question of the degree to which the freedoms generally accorded American adults are applicable to college students, but the statement of the problem was so diffuse it was difficult to determine where the investigator would begin. Among the topics mentioned for study were (1) traditional adult liberties, (2) campus problem areas such as freedom of student speech and assembly, and disciplinary procedures, (3) sources of limitations on student freedoms, (4) the nature of the student's relationship to the college, (5) the role of college regulations in governing students, (6) the role of the student personnel worker, and (7) the characteristics of individual students or student bodies that reveal a "readiness for freedom." In addition, the investigator discussed under each of these major topics a number of more specific problems to be studied.

The Japanese game of Go provides an excellent analogy of what happens when one fails to delimit the problem. For those of you who are not familiar with the game, it is played on a board which is similar to a chess board, although one plays on the intersections of the lines rather than the spaces between as in chess. The object of the game is to control as much of the board as possible. If one is able to surround a group of the opponent's men or stones as they are called, a double advantage accrues. One captures the opponent's stones which are removed from the board and used to fill up the opponent's territory at the end of the game, and at the same time, one gains the territory which was left vacant by the removal of the stones. The novice often attempts to surround too large a group of the opponent's stones and in so doing must spread a thin line of his own stones around them. This frequently enables the opponent to break through at a number of points and surround several clusters of the attacker's stones.

The investigator who attempts to encircle a diffuse problem by attacking its several aspects simultaneously is, it seems to me, in a somewhat analagous situation. The strength which he can muster at any one of the points is insufficient for the task, and his theoretical framework cannot contain the problem. This is not a denial of the fact that a number of related variables are usually considered in a single study. It is intended rather as a caution against attacking more aspects of a complex problem than one can reasonably expect to cope with.

The objectives, hypotheses, or questions are stated too broadly.

The objectives, hypotheses or questions represent the investigator's attempt to focus his attention on specific aspects of a problem. The sharper the focus, the more likely the investigator is to succeed in his task. The converse is also true. A statement of objectives and hypotheses or questions which is broad and ambiguous or stated in a superficial fashion is likely to provide only superficial conclusions when the study is completed.

The Cooperative Research Program receives many proposals which have such broad, superficial objectives. Let me quote the objectives of one of these proposals:

"1. To provide an opportunity to introduce foreign languages into elementary schools without changing the curriculum or adding a special foreign-language teacher.

2. To bring selected teachers together on this campus for a workshop to develop materials, to become acquainted with audio-visual equipment and techniques, and to receive instruction in language to be used.

3. To develop language programs on tapes, and discs, together with teacher made guides that may be used by a teacher in a self-contained classroom."

As stated these objectives have little meaning. The first even appears self-contradictory since it is difficult to envision the introduction of foreign language instruction into elementary schools where it has not been taught before without some change in the curriculum. What the investigator has in mind as he explains later is that the language program be correlated with a unit of study already included in the curriculum. Even this, however, will result in a changed curriculum.

. . . .

The main point I wish to make, however, concerns the superficiality of the objectives. It is self-evident that foreign languages can be introduced in elementary schools, that selected teachers can be brought together for a workshop, and that language programs can be placed on tapes for use in self-contained classrooms. These are not the important questions to be asked in a study of this kind. The important questions are: (1) What foreign language achievement results from the introduction of such materials? (2) How is achievement in other curriculum areas affected? (3) What teacher training is necessary to produce reasonable competence in handling such materials and a host of related questions? While it is evident from the procedural section that evidence would be obtained on at least one of these questions on the achievement of students with and without the foreign language, the objectives do not reflect this in the way they are stated. On the contrary whether justifiably so or not , the superficial statement of objectives casts a shadow across the investigator's competence.

The procedures are lacking in detail.

The investigator frequently uses brevity to cloak what appears to be a carelessly planned and superficial approach to the problem. A proposal, for instance, which sought to evaluate the various methods of instruction used in educational television was not as convincing as it might have been had its own procedural section covered more than a single typewritten page. In essence, the procedures indicated the investigator would locate schools, institutions, colleges, and universities that are using educational television and contact these colleges by mail to obtain information on their methods of teaching and any materials they have which describe those methods. He would visit 12 of these institutions to secure detailed descriptions of the methods used. The institutions--whether he meant the 12 or the entire group is difficult to tell--would be asked for an evaluation of the various methods and an indication of the age level at which they were most successful. An investigator who omits more than he includes should not expect the Committee to read procedural details between the lines. The Committee lacks both the desire and the clairvoyance to do so.

A simple design is used to investigate a complex problem.

Comparing the differences in mean scores of two groups has been a useful tool in advancing our knowledge about the field of education, but the indiscriminate use of this technique has resulted in many a reject proposal under the Cooperative Research Program. Let me illustrate this with an example. The prime objective of one proposal submitted to the Program was "to test the effectiveness of a method for salvaging potentially capable students who might otherwise drop out of college because of the difficulties of making the transition from high school." This study would have provided a program of mathematics and English instruction to an experimental group of high school graduates during the summer before they entered college. A control group would not have received the instruction. During the freshman year the mean achievement of the two groups would have been compared. This study says in effect that a group which has had instruction in English and math will be better prepared to cope with college math and English than a comparable group who have received no instruction. This intergroup analysis not only compares "something" (the instruction) with "nothing" (the lack of instruction), but it completely obscures the complexity of the problem. In reality one would expect that some students--those who were highly motivated but who lacked certain math and English skills--would show significant improvement; while others--those who lacked the motivation for academic work--would show little or no improvement.

Relevant variables are not considered or are lightly dismissed.

The failure to consider relevant variables in designing a study is a common error and a serious one. Some uncontrolled variables are injected into a study through a biased sampling procedure. The proposal cited above in which a summer program in math and English was offered to entering freshman college students provides an excellent illustration. After dividing the freshmen at random into two groups, the investigator would have used only volunteers from the first group. Since the highly motivated student is more likely to volunteer, the two groups would not have been equated on the motivation variable.

Occasionally an investigator appears to operate under the assumption that if he confesses to a number of uncontrolled variables in his study, he has done all that reasonably could be expected of him. The reasoning usually runs like this:

> I know that the "Hawthorne Effect" may have some influence on the differences in the gains of the experimental and control groups, but I do not expect its influence to be appreciable.

A person making such a statement should be alerted to an experiment which was conducted by the National Foundation for Educational Research in England and Wales. This agency administered to an experimental group a set of nonsense exercises which the agency said would result in an improvement in the child's ability to read. In reality, the exercises were designed to confuse the child. When the experimental and the control group which had not received the exercises were compared, there was a significant gain in favor of the experimental group. The simple fact that the experimental group had been singled out for treatment was sufficient incentive for the children to improve, despite the confusing nonsense exercises. Our old friend the "Hawthorne Effect" had shown that at least in this case its influence was appreciable.

Conclusion

Although the picture of research presented in this paper is not the most encouraging picture one could hope for, there are some bright spots which I feel should be mentioned. First, the Cooperative Research Program has had an annual increase in number of proposals submitted to it, and this increase--even at a continuing recommendation rate of 30%--means an extension of our knowledge about the field of education. Second, I am confident that anyone who would take the trouble to examine the proposals submitted to the Program during its first and fifth year of operation, would acknowledge the greatly increased quality of the current proposals. It is with this increase in quantity and quality in mind that we must behold the picture of research presented here. We must focus not on what is, but what could be. What could be--perhaps five or ten years hence--is a complete reversal of the present recommendation and nonrecommendation rates so that 70% of the proposals would be recommended and 30% rejected. Whether such a possibility becomes reality depends substantially on what we do with the information available to us. If we use it simply to impugn the work of others, then it serves little purpose. If on the other hand, we employ such information to examine our own research efforts, then the possibility of progress in educational research is substantial indeed.

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THE WRITING OF PROPOSALS

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We are to consider in this session the general topic of proposal writing. You have received four different sets of materials which will be of some use in making the points we wish to make. These consist of: Proposal Form for Use in Applying to the United States Office of Education under Public Law 531; Proposal Form for Use in Applying to the United States Office of Education under Title VII of the National Defense Education Act; part of the Proposal Form for Use in Making Applications to the National Institutes of Health; and an outline entitled, "The Elements of a Proposal."

My talk today will be based largely upon the fourth document in which I have tried to list the major headings which appear somewhere in almost every kind of proposal. I intend today to review these major categories with you and to make some comments about the kinds of materials which ought to be included under each head. Not all points are relevant to all agencies, of course, and it is imperative to keep in mind the nature of the agency as you prepare a proposal. My comments are intended only as general guides.

ELEMENTS OF A PROPOSAL

A. Statement of the Problem

1. State the problem in terms intelligible to someone who is generally sophisticated but who is relatively uninformed in the area of the problem.
2. Define and delimit the specific area of the research.
3. Foreshadow the hypotheses to be tested or the questions to be raised.
4. Indicate briefly the significance of the study (this item to be elaborated later.)
5. Be certain to include somewhere a sentence such as "The purpose of the research is..."

It is crucial in preparing a proposal to place yourself in the role of the person who is going to have to read it. Your proposal is likely to be considered along with many others. The person who reads it may be tired, harrassed, irritable; more importantly, he probably is not an expert in your content area, although he might be quite sophisticated in general. It is important under these circumstances that your statement be in clear, distinct language which catches the reader's attention from the outset and lets him know in precise and simple terms just what it is that you propose to do. If you fail to communicate with the reader in those first crucial paragraphs, his first hasty impression of inadequacy is also likely to be his final decision. It will be no consolation to you, I am sure, to know that the proposals which survive this first reading are treated in less cavalier fashion on subsequent readings, if your proposal was one of those culled out on a first examination.

I want to emphasize especially the necessity for stating the problem distinctly and precisely in terms which are intelligible to someone who is generally sophisticated but who is relatively uninformed in the area of the problem. This seems to be the biggest single error that people make in writing proposals. They assume that the reader to whom the proposal is addressed is just as informed about the content as the proposer, just as keenly aware of the significance of the particular problem being proposed. Nothing could be further from the truth. The keynote then is good, clean, concise organization, accomplished early in the proposal.

It is also important in your statement of the problem that you define and delimit the specific area of the research. No single project can accomplish everything, and the proposer ought not to feel guilty or ashamed because certain things must be eliminated. It is not necessary in making exclusions to list compulsively all of the elements which you do not propose to include; so, for example, if your research concerns neurotics, it is not necessary to say that persons under the age of two are excluded. No one would expect you to deal with infants in a study of that sort. On the other hand, if you are going to deal with adjustment problems in schools, it would normally be assumed that you will deal with boys and girls. If you intend to omit girls, then you ought to say that.

In this initial problem section you might also utilize to advantage the Shakespearian strategem of "foreshadowing." You should indicate, at least in outline, the broad questions or hypotheses with which you will be concerned. Similarly, you should give some hint of the potential significance of the study. Although your proposal form will undoubtedly require you to make a detailed statement of significance at a later place in the proposal, you may very well wish to catch your reader's attention in these first few critical paragraphs with some general statements.

Finally, you should be certain that your problem section contains a sentence of the form: "The purpose of this research is..." Many proposal writers never let you see the woods for thetrees; they are so concerned with specifics that it does not occur to them to make a general statement which catches up the point of the proposal in one or two sentences. Sometimes such a general statement of purpose is found at the end of the proposal or tucked away in some other section where we would not normally expect to find it. It is imperative that there be a single clear statement of purpose in this first section.

B. Review of the Literature

1. Demonstrate to the reader that you have a comprehensive grasp of the field and are aware of important recent substantive and methodological developments.

2. Delineate the "jumping-off place" for your study: how will your study refine, revise, or extend what is now known?

3. Avoid statements which imply that little has been done in the area or that what has been done is too extensive to permit easy summary. Statements of this sort are usually taken (and often rightly) as indications that the proposer is not really familiar with the literature.

A review of the literature is required in almost every proposal, and it has always interested me that this task is always put off until the very last moment by most proposal writers. Evidently, such reviews are perceived as undesirable or unnecessary chores. Rationalizations arguing against such reviews are common; e.g., "everybody in the field knows the literature"; or "nothing has been written"; or "it is so complicated, how can I pick out four or five references which will catch the meaning?" and so on. In some cases, these rationalizations may be justified, but it should be apparent that a section on the review of the literature can perform some very useful functions both for the person reading the proposal and also for the proposer while he is in the process of thinking through his problem.

First, an adequate review of the literature can demonstrate to the reader that you have a comprehensive grasp of the field and are aware of important recent substantive and methodological developments. The reader will want to know whether you are still thinking in terms of the literature of the late 30's or early 40's or whether you know some things that were done last year. You may wish to report on some developments which have not yet found their way into literature, or that while they have been reported in the literature are not yet contained in the Education Index or Psychological Abstracts.

Second, a review of the literature delineates the "jumping-off place" for the study. No one does research in a vacuum; it is always necessary to draw upon other conceptions, other ideas, and other formulations. It is useful as you begin a study to know what previous thinking in the field has been. Making a review of the literature is thus probably as important to the researcher as it is to the reader.

Finally, avoid statements which imply that little has been done in the area, or that what has been done is too extensive to permit easy summary. Statements of this sort are usually taken (and often rightly) as indicatations that the proposer is not really familiar with the literature. You have all had the experience, I am sure, of the graduate student who wishes to do a study in a particular area and assures you that nothing is reported in the literature which is the least bit relevant to it. The skeptical attitude which you take toward this student is typical of what you can expect from your reader if you venture this kind of statement in your proposal.

C. Questions and/or Hypotheses

1. Questions are relevant to normative or census type research—(How many of them are there? Is there a relationship between them?). Hypotheses are relevant to theoretical research, and when you state hypotheses the reader is entitled to have an exposition of the theory that leads to them (and of the assumptions underlying the theory.)

2. Hypotheses can be couched in four kinds of statements:

   a. Literary null: a "no-difference" form in terms of theoretical constructs.

   b. Operational null: a "no-difference" form in terms of the operations required to test the hypotheses.

   c. Literary alternative: a form that states the hypothesis you will accept if the null hypothesis is rejected, stated in terms of theoretical constructs (this is usually what you hope the experiment will show).

   d. Operational alternative: similar to (c) except that the operations are specified.

   e. In general, you should be prepared to interpret any possible outcome with respect to the questions or hypothese. It will be helpful if you visualize in your mind's eye the tables (or other summary devices which you expect to come out of the research, short of the actual data.)

All research attempts either to test hypotheses or to raise questions. It is appropriate to state hypotheses when it is the purpose of the research to test the implications of a theory. Within the framework of a theory, hypotheses are deductions following from and logically consistent with the assumptions upon which the theory is based. Hence, if hypotheses are stated, the reader has the right to know the theoretical framework within which they are derived and the logical assumptions upon which they are based.

It oftens turns out, particularly in education, that the researcher cannot state the theory. In that case, it is appropriate to raise questions rather than to propose hypotheses. This is particularly true in the event that the inquiry is directed into an area about which we are unsophisticated, so that the purpose of the research is simply to get a description of the area to be investigated.

Let me return now to the problem of stating hypotheses, where these are appropriate. There are at least four different ways in which hypothese can be stated. These four ways are generated by combining either the "null" or the "alternative" form with either the "literary" or "operational" form. Let us see how this develops:

A null hypothesis is the hypothesis stated in a "no difference" form. Statisticians have become accustomed to stating hypotheses in this form because such statements fit in well with the logic of the way in which statistics are developed. Thus, statistics is the numerical science of comparing phenomena with chance models, on the assumption that if the phenomena being studied are themselves due to chance causes, the differences between the phenomenological data and the model will be zero. Thus, from a statistical point of view, the null form is the logical way to state the hypothesis.

On the other hand, the alternative hypothesis is the hypothesis you propose to accept if the statistical null hypothesis turns out not to be tenable. The alternative hypothesis thus describes the result that you hope will turn out, i.e., non-chance occurrence.

Regardless of whether the hypothesis is to be stated in null or alternative form, the language in which the proposal is couched can itself take one of two forms: literary or operational. If the language is in literary form, the expression of the hypothesis will involve certain theoretical constructs or concepts; while if the hypothesis is couched in operational terms the definition will involve instead the instruments used to measure the variables implied by a theoretical construct.

By combining these four terms, we are able to define the four types of hypotheses with which we shall be concerned: the literary null, the literary alternative, the operational null, and the operational alternative. Let us see what form each of these four would take with a real example, e.g., the relationship of school achievement and intelligence. If we were to state a literary null hypothesis relating these two variables, we might assert, "There is no difference in school achievement for high and low intelligence pupils." Placing the same hypothesis in operational null form we would assert, "There is no difference between the mean grade point averages achieved by students in the upper and lower quartiles of the distribution of the Stanford-Binet I.Q.'s." The operations implied by this definition include the selection of the upper quarter and lower quarter of a distribution of students for whom the Stanford-Binets are available, determining the mean grade point averages for these two groups and comparing those means through some statistical test of significance.

Stating the same hypothesis in the literary alternative form, we would assert, "High intelligence pupils will achieve more in their classes than low intelligence pupils." (This is the form of hypothesis which you are most likely to find in an unsophisticated proposal.) And finally, we may state the hypothesis in the operational alternative form, in which case we would assert, "Pupils in the upper quartile of the Stanford-Binet I.Q. distribution achieve significantly higher grade point averages than do pupils in the lower quartile."

I hope that despite this brief presentation the differences between the four forms are clear. I think you would find it interesting and instructive if, whenever you have a hypothesis in mind, you attempt to write it in each of these forms. If it is possible for you to do this, you'll have a much better grasp of what you are trying to say than if you attempt to write just one of them.

As I have indicated, the literary alternative is the style usually found in an unsophisticated proposal. The statistician and the research methodologist will prefer an operational null, and the other two forms are intermediate in the extent to which they are preferred.

I would like to make a final point now about the interpretation of data with respect to given questions or hypotheses. I think you will find it very helpful if you will have thought out in advance of writing the proposal just what action you will take in every conceivable contingency, i.e., no matter how the data turn out. It is very helpful to visualize in the mind's eye the tables or summary devices which you will include. You will clarify the problem for yourself and for your reader if it is possible for you to imagine the tables and charts complete with headings and column and row designations, in short, with everything except the final data actually filled in. (Such tables are often called "bogus" tables.) This procedure will help to clarify not only the questions you want to raise but the kinds of data that you will need to answer them.

D. The Design

1. Indicate the steps you will take to answer every question or to test every hypothesis indicated in the previous section.

2. All research is plagued by the presence of confounding variables: the noise, as it were, that covers up the information you would like to have. Such confounding variables must either be eliminated by various kinds of controls or be estimated and taken into account by randomization processes. Thus, in this section it will be proper for you to indicate:

    a. The variables you propose to control, and how you propose to control them, experimentally or statistically.

    b. The variables you propose to randomize, and the nature of the randomizing unit (pupils, grades, school, etc.).

3. You should be aware of the possible sources of error to which your design exposes you. No one can expect of you that you will in every situation produce a perfect, errorless design. However, you can be expected to be aware of the possible sources of error and to do what you can to overcome them or to take them into account in your interpretation. To demonstrate this awareness you should yourself point out the sources of error in this section.

4. In discussing your design, it will be helpful if you can label it according to the terms of some logical or statistical typology. Such labeling is helpful in communicating your precise intention to the reader, and it also helps you to identify possible sources of error.

As you begin to develop a design for a proposal, it is important to indicate every step that will be taken to answer every question or to test every hypothesis involved. I find that a very common error among proposal writers is that they will ignore some of the questions or hypotheses that they have proposed, developing a design which tests only some of the factors involved. I would consider it crucial that you check every question or hypothesis proposed to be sure that it is taken care of by some aspect of the design.

It is further crucial that you make your design as precise as possible. All research is plagued by the presence of the confounding variables: the noise, as it were, that covers up the information you would like to have. Such confounding variables must either be eliminated by various kinds of controls, or must be estimated and taken into account by randomization processes. Or, to put it another way, you should indicate for every variable which might influence the outcome of the experiment the controls, either experimental or statistical, which you will use to deal with that variable.

We might take as an example an experiment on the relationship of personality to school achievement. Certainly one of the variables which it would be important to control would be intelligence. The question then is how you are going to control it. If the study is concerned with whether persons with one of two personality types have higher or lower achievement scores than the other, you might match the people in these two groups on intelligence, or you might build in intelligence as a variable in a multivariate design by having low, medium, and high intelligence groupings as part of the plan. Or you might use the intelligence test scores as a control score in an analysis of a covariance procedure , which would, of course, be a statistical way of controlling this variable.

If it is not possible to control crucial variables in one of the ways indicated here it is necessary to randomize. Your design ought, therefore, to indicate the variables to be randomized and the nature of the randomizing units. For example, you might decide to take a random selection of all fifth grades in Cleveland, in which case the random unit is the school. Different randomizing units make for quite different kinds of conclusions and procedures in statistical analysis.

It is also crucial in developing your design that you be aware of the possible sources of error to which the design exposes you. Now no one can expect you to produce a perfect, errorless design. You are almost always forced to leave some contingencies unresolved; these then become possible sources of error about which you cannot do anything . However, you should be expected to be aware of the possible sources of error involved and of what you may do to take them into account in your interpretation. To demonstrate this awareness, you should yourself point out the sources of error or the possible sources of error in the design. It is certainly better to point out the sources of error yourself than to leave it to a critic, possibly unfriendly, to do it for you.

Finally, as you develop your design it will be helpful to you and to your reader if you can label it according to the terms of some logical or statistical typology of design. Such labeling is helpful in communicating your precise intention to the reader, and also helps you to identify possible sources of error. When you say to me, for example, that you are going to apply the "groups-within-treatments " design which Lindquist describes, you communicate a great deal with that statement and save yourself perhaps three paragraphs of descriptive writing.

E. Instrumentation

1. In this section you should outline the instruments you propose to use. These should be described if they are already available; if not, the procedures you will follow to develop or select the instruments should be described.

2. Since the selection of instruments is in most cases also the operational definition of the variables, this is the most crucial step. It is at this level that a literary conception such as, "Intelligence is related to school achievement," is translated into the operational statement, "Stanford-Binet I.Q. is related to Grade Point Average." Strictly speaking, any findings of your research will be relevant only to the instrumental or operational statement. Of course, operational definitions are always arbitrary, but you should defend your particular brand of arbitrariness on some basis, even if none better are available than expedience, availability, or simplicity.

3. In addition to the validity problem posed in (2), you should also be aware of questions of reliability and objectivity, and deal with these.

Because the selection of instruments in most cases also constitutes making an operational definition of the variables involved, this selection is a most crucial step. It is a step at which many designs break down. Many researchers have started out upon fundamentally sound ideas but have failed to produce fruitful findings because they utilized instruments which were not relevant to the variables involved. Although you may be interested in the correlation between intelligence and achievement, the correlation that you actually obtain is always instrumental, e.g., between Stanford-Binet I.Q. scores and grade point averages, or some such. Unless the Stanford-Binet I.Q. and the grade point average as metrics are good definitions of what you mean by intelligence and achievement, you will be wasting your time in computing this correlation. Operational definitions are a very important aspect of the whole problem of research.

Readers of research proposals are thus rightly concerned with the nature of the instruments to be used. Very often proposal writers do not describe the instruments they will use because they remain to be developed, so that the researcher is uncertain just what form they will take. But the researcher can certainly say how he proposes to go about developing the instruments. Very often this description will be sufficient to allow the reader to make some judgment about their presumed validity. Finally, I should say in addition to the validity problem just described, you should also be aware of questions of reliability and objectivity in discussing your instrumentation. Questions of reliability and objectivity no longer carry the same weight that they did twenty or thirty years ago, and it is not uncommon now for reliability in instruments not to be reported at all. Of course, no one will raise serious questions about the reliability of an instrument if the instrument does what you say it will do. On the other hand, the small additional labor involved in obtaining reliabilities is often more than amply repaid by the increased confidence which both you and the reader can have in your work.

F. Sampling

1. The first reason for being concerned with sampling is that of external validity, i.e., knowing the population to whom the findings apply. To generalize validly the findings for a sample to some defined population requires that

the sample shall have been drawn from that population according to one of several probability sampling plans. By a probability sample we mean that the probability of inclusion in the sample of any element in the population must be given a priori (all probability samples involve the idea of random sampling at some stage). In experimentation, two distinct steps are involved:

a. Random selection, i.e., the subjects to be included in the sample must all be chosen at random from the same population. You should define the population and indicate the sampling plan in detail.

b. Random assignment, i.e., the subjects selected for the sample must be assigned at random to one of the experimental treatments. Subjects assigned to a group on the basis, e.g. membership in Boy Scouts vs. no membership in Boy Scouts, are not randomly assigned and, hence, the data are invalidated as experimental data (such inquiries are sometimes referred to as "ex post facto" experiments). You should indicate the assignment procedure you will use.

2. The second reason for being concerned with sampling is that of internal validity. Without a probability sample we cannot construct an error estimate; hence, we have no way of telling whether the findings represent mere "noise" or whether they also contain information, and if so, in what proportion.

There are two reasons for being concerned with the sampling in any research. The first of these has to do with questions of external validity, i.e., knowing the population to which the results will apply. In order to make such generalizations unequivocally, it is necessary that the sample be drawn on a probability basis from an a priori population. The term "probability sample" simply implies that the probability of inclusion in the sample of any element in the population is known in advance.

In addition to drawing the sample at random from the population, subjects included in such a sample must be assigned at random to one or another of the experimental treatments involved. Subjects who are assigned on the basis of some already existing criterion, for example, membership in the Boy Scouts vs. no membership in the Boy Scouts, are not, it should be noted assigned at random. Data from experiments conducted under such conditions of assignment are invalidated as experimental data. Research involving such non-randomly assigned subjects are usually referred to as "ex post facto" experiments, and this group constitutes what is probably the single largest group of misinterpreted research found in the literature today.

The second reason for being concerned with the sampling is internal validity. You will remember that I have defined statistics rather informally as a way of comparing the variability of information variables to the variability of randomized variables. The variability of these randomized variables is the quantity which statisticians call the "error estimate." Without a probability sample it is impossible to construct an error estimate; hence, there is no way of telling whether the findings represent mere "noise" or whether they also contain information and, if so, in what proportion.

G. Data Collection

1. You should outline your general plans for collecting the necessary data, including an explicit statement covering the field controls you will employ. The major concern here is generally that you will maintain equivalent situations for all groups.

2. You should give some idea of the time schedule you expect to follow, including any plans for counter-balancing to take care of order effects.

I believe the points outlined above are self-explanatory. The reader of your proposal will, in general, wish to know what kinds of control you will institute in order to maintain equivalent situations for all groups. Your discussion should thus refer to your plans for administering instruments, counter-balancing order effects, replacing subjects who are lost during the course of the experiment, the time schedule you propose to follow, and the like.

H. Data Analysis

1. You should specifiy the statistical and/or other analytic procedures you will use. Where instrumentation remains to be developed, it may not be possible to make a very specific statement in the absence of information regarding the strength of measurement, continuity, form of distribution, etc., which may be expected.

2. Develop "bugus" tables to indicate the nature of the analysis.

3. Indicate briefly any special analytic tools you have available, e.g., IBM equipment.

The analysis of data usually involves some sort of statistical treatment. In order to selecte appropriate statistics, it is necessary to have certain information about the numbers which you propose to analyze: in particular, it is necessary to know (a) the strength of measurement represented by the metric, i.e. whether we may regard the numbers as frequencies, ranks, or scores; (b) the continuity of the metric, i.e. whether or not the data represent positions along some measurement continuum, or simply categories of events; and (c) the form of the distribution, whether normal, skewed, kurtotic, etc. Insofar as possible, you should make reasonable estimates concerning the form which your data is likely to take, and from those estimates to specific appropriate statistics. In some instances you may not be able, at the time you are writing the proposal, to estimate the kinds of numbers your instrument will produce; e.g., it is possible that the instrument may not yet be constructed. If so, you should at least indicate to the reader that you are aware of the problem of variation in metric and plan to take it into account at the first stage at which you have sufficient data to do so.[2]

The degree to which you must be explicit in describing your data analysis procedures depends in part on whether you are making your proposal to a "granting agency" or a "contracting agency." In the latter case, your proposal is in part a contract for work to be done and must be specific. Indeed, in the case of Federal agencies, the law requires that all proposals to contracting agencies dealing with situations whenever the number of cases exceeds 12 must be submitted to the Federal Bureau of Statistical Standards for approval. Hence, the contracting agency may legally be required to extract from you a complete and detailed statement of data analysis procedures. The use of "bogus" tables is especially well suited for this purpose.

It is also important to describe briefly any special analytic tools which you will have available, for example, IBM equipment. Thus, if your research design requires you to do a factor analysis on 39 variables, it is unlikely that you can get support for it unless you have available a computer at, say the "650" level, because without such a machine it would be impossible to do such work in a reasonable period of time. It is important for the reader to know whether or not such equipment is available in such an instance.

I. Significance

1. Indicate how your research will refine, revise, or extend existing knowledge. Note that such refinements, revisions, or extensions may have *either* substantive or methodological significance.

2. Almost all studies have two potential audiences: Practitioners and professional peers. Statements relating the research to both groups are in order.

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[2] An important development in the area of statistics is that of the so-called "non-parametric" statistics. These statistics make it possible to make more accurate analyses of the kinds of data typical in the Social Sciences and especially in Education than has heretofore been the case. The sophisticated research worker needs to have a thorough understanding of this new and important field.

3. Indicate what the research means for your institution, e.g., it fits in with an institutional research program, it will contribute to renewed interest in research on the part of colleagues, etc. Very often grants are made as much on the basis of cultivating an institution as on the basis of intrinsic research merit.[3]

4. Indicate what significance the research has in your own development and that of other members of the research team.[3]

The section on significance is often the one which the proposer finds hardest to write. I would like to make a number of concrete suggestions which I think will simplify this problem for you a great deal.

First, indicate how your research will refine, revise, or extant existing knowledge. I would like to call your attention to the fact that such refinements, revisions, or extensions, may have either substantive or methodological significance; or, to put it another way, it may not be just the content which is important. Be sure to keep both content and method aspects in mind.

Second, almost all studies have two potential audiences, practitioners and professional peers. Statements relating to both groups are in order. What will the research mean to other psychologists? What will it mean to school teachers in the classroom? And so forth.

Third, indicate what the research means for your institution. For example, it is quite appropriate to indicate that it fits in with some institutional research program, or that it contributes to some renewed interest in research on the part of colleagues, and so on. Very often plans are made on the basis of cultivating an institution at least as much as on the merits of the research itself. [illegible] you are concerned about making such a statement in the proposal itself, then by all means include it in the covering letter, but be sure that is is in there somewhere.

Finally, indicate what significance the research has in your own development or in that of other members of the research team. What is it doing for you? What difference will it make in your own growth whether you do the project or not?

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[3] These two items may properly be discussed in a covering letter if not in the proposal itself.

J. The Budget

1. Investigate the budget requirements of your own institution

2. Investigate the budget requirements of the granting agency

3. Do not overlook overhead items

The budget is probably the most difficult portion of the proposal for the novice to prepare, because of the many local and agency regulations that are involved. Every university has its own set of rules about budgeting and about the "bases" that must be touched before a proposal leaves campus. At the same time, almost every university has designated some agency to be completely responsible for budgeting practice (at my University, this agency is The Ohio State University Research Foundation, for example). It will pay you to work closely with this agency since your campus is likely to have policy on the following budgeting matters:

1. Wage and salary items, including suitable projections for increments on contracts running longer than a single academic year

2. "Fringe benefits," including retirement and insurance contributions

3. Released time and supplementary pay practices

4. Purchase of capital equipment

5. Space allocations

6. Travel costs and per diem allowances

7. Publication costs

8. Overhead expenses

Similarly, the agency to which you are applying may also have special budgetary requirements. These may come to light only after your proposal is accepted and a representative of the agency calls on you to "negotiate" the budget. (It comes as a surprise to many investigators to learn that acceptance of a proposal does not also imply acceptance of a budget.) Very often the agency is satisfied if you can purport that your requests are in line with standard policy at your university. Typically, however, restrictions exist on such things as the purchase of capital equipment, overhead charges, travel costs, and publication costs. In cases where "matching" arrangements exist, i.e., where the proposer is required to list both agency funds requested and local contributions, the amount of university matching may have to equal or exceed some specified proportion of the requested funds to be acceptable.

Finally, I should like to call your attention to the problems of overhead. The overhead question has been considerably debated; with one group, usually university fiscal officers, holding that research requires huge overhead costs which ought to be paid by the sponsoring agency; and another group, usually foundation or agency fiscal officers, holding that overhead ought to be paid by universities as evidence of their serious interest in research. However you may feel on this issue, it is clear that overhead needs to be taken into account. At my University, overhead charges are made at the rate of 50 per cent of all wage and salary items, a considerable amount. Very often such charges are not permissible, e.g., U.S. Office of Education contracts pay only 15 per cent overhead (i.e., 15 per cent of Federal Funds requested). Since this amount rarely equals the standard overhead charges of the university, there is usually a sizeable "differential overhead" item that can be shown as an agency contribution.

This brings me to the end of my prepared outline. Before I close, however, I would like to indicate to you a few of the "facts of life" about proposal writing which are usually not contained in the books on research.

First, "them that has gits." The proposer who can show a long history of successful work or who is doing research in an institutional setting which is well equipped to handle the problem that he wants to do, is way ahead of his competition. This means, of course, that the novice has a very difficult time breaking in. This is something that he must face up to, however; very much like the writer who has to write a dozen short stories before he will finally have one accepted by a magazine.

Second, in drafting a proposal, get consultant help from someone who knows the agency to whom you are addressing the request. Find someone who knows what the current thinking is in that agency. Every agency has considerations which are invoked in making judgments about proposals; these may be very mundane, such as being sure that the country is geographically covered, or very esoteric, as, for example, being sure that the proposal fits in with the philosophic point of view of the grantor. It may be that the granting agency had some particular orientation on certain problems—it may be worth your while to point out that your orientation is like that of the agency. Do not overlook the fact that the best consultants are usually the people who work for the agency to whom you are sending the proposal. It may be useful, therefore, to get into direct contact with agency personnel and get an informal opinion before the fact. This, of course, raises the problem of financing, but you and your institution may be ahead in the long run if you spend some money in just this way.

Occasionally there are agencies on your own campus that could be of some help to you. On my campus, for example, we have the College Coordinator for Research, the Office of the Vice President for Research, and the Research Foundation. The latter is especially helpful in the red tape aspects of preparing a proposal. There are, of course, likely to be individual people who can be of great help; people who have a history of doing certain kinds of research and who perhaps have had success with particular kinds of agencies. By all means, take advantage of such local resource people.

Another fact of life that I would like to point out to you is that very often decisions about proposals are not made on the basis of what is contained in the proposal, but rather on the basis of who the proposer is and what institution he represents. This situation arises rather naturally out of the processes by which grants are often made. Most persons writing proposals nowadays are sophisticated enough to be able, sometimes with the assistance of qualified consultant help, to write a very "slick" proposal. Proposals are thus uniformly good, so that it is almost impossible to make decisions about which to support purely on the basis of the merits of the proposal itself. Other considerations must thus be invoked, and thus it is not unusual that the qualifications of the proposer or the institution are considered.

CASE RESEARCH IN PUBLIC ADMINISTRATION

James Heaphey
University of California

It is indeed a pleasure to be here, delivering a paper at a gathering of scholars in a field other than one's own. I feel honored, and I hope that our common interest in administration will be a bond between what seems important to me and what is of concern to you.

My topic is "case research in administration" and the idea I have of my job is to discuss what has been going on regarding case research in public administration, with a view towards bringing out problems and ideas that may be of interest to you in researching educational administration.

In my opinion, the experience with case research in public administration is somewhat embarrassing, because some fundamental errors have been made by some very good social scientists, and somewhat promising, because some stimulating work has been done. The first serious attempt at case research in public administration begin in 1934, under the guiding hand of the Committee on Public Administration of the Social Science Research Council. This program was born in the belief that administrative science in the thirties was in bad shape. The problem, a number of people believed, was that the science then existing did not tell the administrator what to do in a particular set of circumstances. The problem could be overcome, these people also believed, by devising a science of process. An SSRC report stated the goal of the program in the following way:

> (If) enough cases can be fully and accurately described, it is believed that principles and rules of administrative action can be discovered from the cases by an inductive process....(If) such principles can be discovered, then the administrator can be taught that if, in a given set of circumstances, he does a certain thing he will get certain results. To achieve this objective would certainly require thousands upon thousands of cases. The grand objective would seem to be then, to build up for public administrators a body of reported cases comparable to that which lawyers have summarized in Corpus Juris and other great digests of the law.[1]

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[1] William Anderson, "Report of the Committee on Public Administration of the Social Science Research Council, 1934-1945," Part I of Research in Public Administration (Chicago: Public Administration Service, 1945), pp. 28-29.

And so, across the country scholars began writing cases. A plea or two appeared in the journals of public administration for more and more cases. But no one ever suggested, or probably even whispered in a gathering of close friends, years after that beginning, that anything like the promised science was appearing.

My autopsy on the program reads as follows: There was an unmistakable undertone to it that there is such a thing as "one best way" to handle an administrative problem—a belief that had been the "first principle" of Taylor's scientific management school. But no one ever said whether the case studies were meant to be "experiments" in search of the one best way, or if every case was to be an example of the one best way.

There could not be "experiment" without hypothesis, but there were no stated hypotheses. If the cases were meant to be examples then there must have been knowledge to be exemplified; but there was no such knowledge. About all the proponents of the program appear to have had is the faith that truth lies in experience, that if you follow Lord Bryce's advice, polishing your facts till they sparkle like gems, you will somehow, someday, somewhere come upon a generalization. That no one in the procession stubbed his toe on a generalization is of no surprise.

After World War II, a new case research program in public administration appeared. This program began in a seminar Pendleton Herring conducted at Harvard, titled "Government Administration and Public Policy." Herring wanted to explore the interrelationships of administration and policy-making in government. The literature—except for a few things that Herring himself and one or two others had written—was sublimely silent on this matter. Students in the seminar wrote case studies, the goal being the illumination of variables and contingencies that could serve as discussion points and launching pads for research.

Herring's gambit caught on in the academic community and a new case research movement was off and running. In 1948, interested persons of Harvard, Cornell, Princeton and Syracuse universities formed the Committee on Public Administration Cases, with the intent of building up a body of case studies on the interrelationships of administration and policy-making. A three-year program was planned but after 18 months the idea had aroused so much interest that a new organization, the Inter-University Case Program, was formed with an expanded membership of universities and colleges.

This program has become basically an accumulation of teaching materials. Case studies prepared are extremely popular throughout the country for classroom use; in 1952 a casebook was published titled Public Administration and Policy Development,[2] which contains selected cases that have been written since the beginning of the program. Those who are intimately involved with this program claim a variety of fruits. But there can be little doubt that the prime joy is the belief that the case studies give students who read the cases a taste of administration that cannot be gotten from the distilled waters that flow from textbooks.

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[2] Harold Stein, ed., Public Administration and Policy Development (New York: Harcourt Brace and Company, 1952).

These case studies are narrations on decision-making. Those of you who have not seen any of them can perhaps get an idea of what they are like from the following instructions that are sent to case writers.

> An ICP case study /̲the instructions read̲7 is a detailed narrative account of the process by which a decision or number of related decisions,,,were made by a public administrator or group of administrators. Particular emphasis and attention are given to: (1) the manner in which the individuals concerned "sized up" the problem before them, (2) the possible alternative solutions as they saw them (or ignored them), (3) the conferring, compromising, debating, etc., among individuals and agencies that went into making the decision, (4) the social, economic, political, legal, personal, and other factors that surrounded or were in a position to affect the administrators during the decision-making process, and (5) (as necessary to round out the episode) the results of the decision.[3]

As was once commented, these case studies give the student of administration a chance to smell the sweat.

However, all if not quiet on this front. Richard Snyder, who, as most of you probably know, has been working for some years on a theory of decision-making, has argued that one cannot generalize on the case studies contained in the casebook I mentioned before because no economical set of variables has been developed for analyzing decision-making behavior.[4] Another critic, Herbert Kaufman, said in a review of fifteen of the case studies that the Inter-University Case Program is "guilty of a measure of dereliction in producing a steady stream of hypotheses and questions while making no effort to inquire into the scores, perhaps the hundreds, the cases already contain."[5] It is not material for speculation we lack in public administration, Kaufman admonished, there is a plethora of unvalidated propositions and unanswered questions.

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[3] "Some Suggestions for Case Writers," The Inter-University Case Program, No. 3 Thomas Circle, Washington 5, D.C.

[4] "A Decision-Making Approach," in Approaches to the Study of Politics, ed. Roland Young, (Evanston, Illinois: Northwestern University Press, 1958) p. 12.

[5] "The Next Step in Case Studies," Public Administration Review, XVIII, Winter, 1958, p. 56.

A point that has been mentioned to me a number of times is that these case studies often run to lengths that create problems of economy. One professor of public administration who tried using them in his classroom told me that he abandoned them because he felt that the time a student spent in reading them could be far better spent reading other materials.

Let us turn now to some other uses of case research. Philip Selznick's study of the Tennessee Valley Authority, titled, TVA: Democracy at the Grass Roots is a good example of the use of case method for the purpose of explicit theory building. That is, whereas the ICP case product is a straight narration of events, Selznick interprets his materials with a view towards setting up hypotheses that can be the basis for further theorizing. He states that he hopes that he has made a contribution "toward the evolution of a theory of organization."[6] In his methodological note to the work Selznick draws the distinction between his approach and the straight historical narrative approach to a case.

> (An) empirical analysis of a particular organization (he says), of its doctrine, of a phase of policy in action, of its interactions with other structures, was our objective. But in order to trace the dynamics of these events, it has been necessary to attempt a reconstruction, which is to say, a theory, of the conditions and forces which appear to have shaped the behavior of key participants.
>
> Theoretical inquiry, when it is centered upon a particular historical structure or event, is always hazardous. This is due to the continuous tension between concern for a full grasp and interpretation of the materials under investigation as history, and special concern for the induction of abstract and general relations. Abstractions deal harshly with "the facts," choosing such emphases and highlighting such characteristics as may seem factitious, or at least distorted, to those who have a stake in an historically well-rounded apprehension of the events themselves.[7]

Selznick's approach to a case is to direct his inquiry by a frame of reference. A frame of reference he says should be used to provide criteria of significance but not as a surrogate for inductive theory itself, that is, it should not determine what is actually significant. Directives of the frame of reference provide tools for discrimination, he says, but do not demand any special conclusions about the materials under investigation. For example, he points out that while approaching his materials within a guiding frame of reference he was not committed by this framework to any special hypothesis about the actual events but was able to develop them inductively from the empirical data.

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[6] Philip Selznick, TVA: Democracy at the Grass Roots (Berkeley, California: University of California Press, 1953), p. v.

[7] Ibid., p. 250.

Along these lines, another use of case research is discussed by Peter Blau in his study of small groups of government officials, titled The Dynamics of Bureaucracy. The major advantage of this method, Blau says, is that it lends itself to interlocking various research procedures. Social processes, he says, can be examined directly in a case study, and explanatory hypotheses can be tested immediately. As an example, he points out how in his study he was able to pursue the relationship of competitive practices to productivity by manipulating and interrelating various methods such as interviewing, indexing social cohesion, and direct observation.[8]

He also suggests that case method provides an opportunity for comparing the reliability of different research techniques. For example, he says, "The extent of association between officials during their free time at noon was determined by asking in the interview which colleagues an official had never joined for lunch; by observing which ones went to lunch together; and from a record of his luncheon partners each member of the department kept for two weeks. Interview responses (Blau says) proved to be unreliable indices of social interaction in this and in similar comparisons."[9]

Contrasting the kinds of uses to which Selznick and Blau put case research to that of the ICP program we see that case research in public administration has developed along two separate lines. The uses to which researchers such as Selznick and Blau put case method is explained very well and clearly both in general volumes on methodology in social science and in the works of the researchers themselves. I would like, therefore, to spend what time I have left discussing the other use, which has become extremely popular in public administration but which has not received the analysis it requires.

Dwight Waldo has commented a number of times that theory in public administration is "all periphery, with no center." Whereas Selznick and Blau, both sociologists, have a sociological theory, namely structural-functionalism, which provides them with a research orientation, political scientists have no such orienting theory. There was, of course, once upon a time, a thing called administrative science which grew out of the scientific management movement, but that science was based on the assumption that legislative bodies settled policy and administrative bodies carried it out in the most efficient manner possible. Today this assumption is dead—as it should be—therefore, the science is dead, also, for students of public administration.

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[8] Peter Blau, The Dynamics of Bureaucracy (Chicago: University of Chicago Press, 1955), pp. 4-5.

[9] Ibid., pp. 5-6.

Some students believe that a science of public administration can never be attained. This view is expressed by Harold Stein in his introduction to the casebook, Public Administration and Policy Development, mentioned above. Looking at Stein's arguments in that introduction from the viewpoint of the nomothetic-idiographic dichotomy we see that Stein is proposing that public administration must be treated idiographically. (To treat a subject as a nomothetic one is to search for abstract, universal laws about it; to treat a subject as an idiographic one is to deal with concrete manifestations as unique, temporal events.)

Other students of public administration do not quite share this conclusion but do agree that at present we are in a state of "search" for a unifying theory. Some of these students believe that the presentation of case studies as narrations of decisions will provide the data for the building of a theory--although no one as yet has attempted the job, with the exception of a short unpublished paper that Oliver Garceau has written. Other students believe that while these case studies may not in themselves provide the basis for a theory, they do present the challenge that any theory will have to face. That is, in them is contained the kinds of complexities that must be accounted for in any theory that is to be worthy of the name. As a member of the board that selects cases for inclusion in the program once told me: We do not know what the reality is, but whatever it is, this, what is seen in the cases, is it.

These are reasons for the popularity of the Inter-University Case Program products. And what ties them all together, I think, is the fact that in political science as a discipline and activity there exists a goal of training people to be public administrators as well as a goal of studying public administration as a field in the way that sociologists, social-psychologists, etc. do. Given the lack of unifying theory it seems to many people to be reasonable to train people by exposing them to the smell of sweat. As experts in educational theory, you are more familiar than I with the philosophy behind this. Let me just say that in public administration we have borrowed the language and ideas that were developed in the Harvard Business School when that institution broke off from the Economics department and pioneered case method in training business administrators.

Since you are in your field faced with the dual responsibility of training and study, I hope you will be interested in hearing a few criticisms I have of the ICP enterprise.

First of all, I think that those who argue that public administration can only be treated idiographically have over-reacted to the disappointment concerning the old administrative science. In his argument in the introduction to the casebook, Public Administration and Policy Development, Harold Stein equates science with the exact sciences. That is, he sets up criteria of quantification that are satisfied in only a very small part of the physical sciences. As Olaf Helmer and Nicholas Rescher have pointed out, "in... branches of physics, such as parts of aerodynamics and of the physics of extreme temperatures, exact procedures are still intermingled with unformalized expertise. Indeed, (they say) the latter becomes more dominant as we move away from the precise and

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usually highly abstract core of an exact discipline and towards its applications to the complexities of the real world."[10] It seems to me that when one is discussing the scientificalness of a field or subject the relevant question is not, "can we match a certain precision existing in another field?" but rather, "can we make our knowledge in the field more intersubjective, that is, more subject to public verification?"

As for those who do not quite agree with Stein's position but who believe that the theory of public administration can be built from the ICP cases, or, who believe that the theory cannot be directly built from them but must be developed with a view towards explaining them ultimately, I would say the following. It is possible that the problems of decision-makers in public administration are, after all, just one of many dimensions a theory should grapple with. Furthermore, even within this one dimension, that of decision-making, one would have to be careful to not orient the theory to problems as decision-makers see them. A theory of public administration, it would seem to me, that is to be worthy of academic roots should look beyond the immediacies of action, towards the implications of action, and have in view an understanding of administration in its broadest dimensions. While there is undoubtedly a need to train men to be administrators, there is likewise a need to train men to think abstractly about administration, that is, men who are free of the need to face action decisions.

Finally, is there not more than a touch of anti-intellectualism in the ICP program? Is it not the case that the proponents of the program are tending to take a suspicious view of intellectual abstractions in a manner that has been endemic to those who have practiced government administration throughout history? The practitioner's mind seizes upon precedent as a safer guide than principle. For precedent is tested by experience whereas principle is only tested by logic; and speaking for the practitioner, it has been said that "attainments in learning and science do little to make men wise in politics." One of the greatest dangesr in this attitude as E.H. Carr has pointed out, is that it "easily degenerates into the rigid and empty formalism of the mandarin, and claims an esoteric understanding of appropriate procedures which is not accessible even to the most intelligent outsider." [11]

These are criticisms which , I believe, the case method--when it involves the kind of case which is a narrative on decision-making--must take into account. I do not claim to have any easy answers to the problems these criticisms raise; they are dilemmas faced by all people who are engaged in the dual goals of training persons to perform in a field and philosophizing, or theorizing, about the same field.

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[10] Olaf Helmer and Nicholas Rescher, "On the Epistemology of the Inexact Sciences," Management Science, VI, October, 1959, p. 26 .

[11] E.H. Carr, The Twenty Years' Crisis, (London: MacMillan and Co., 1951) p. 16.

In order to develop a science of decision-making behavior (through the use of case studies) it would be necessary to look for aspects and elements of decision-making that may not appear to be important to the decision-maker, and to write case studies with an eye towards the needs of research design. This is the kind of experience that John Pfiffner and some advanced graduate students have had at the University of Southern California in their attempt to use case method to research decision-making. What they found was that it was necessary to encourage a "give-and-take" between the requirements for a case study that provides a picture of the real complex dimensions of decision-making and the requirements of theory building.

These dual goals are also the reason why one cannot choose either the ICP brand or the Selznick or Blau brand as the better use of case research. "Life is haste," a Spanish philosopher has said, "and has urgent need to know what it is up against, and it is out of the urgency that truth must derive its method."[12] There is, understandably, an urgency to meet and deal with the existential problems of administration; and while the well-patterned but slowly spun webs of conception are in progress, there is bound to be more than a little striving to grasp and deal with administration by direct perception of the problems. But, while one cannot choose between the two brands of case research, one can insist that each be reasonable in its own terms.

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[12] José Ortega y Gasset, History As A System (New York: W.W. Norton and Co, Inc., 1961), p. 182.

SOME POTENTIAL CONTRIBUTIONS OF SURVEY RESEARCH IN EDUCATIONAL ADMINISTRATION

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The sociologist surveying the enormous terrain of research in education is struck first by how little use has been made in this work of modern survey research methods, and second, how widespread is the identification within education of "survey research" with "school surveys." School surveys, as everyone knows, are compendia of information, gathered in all sorts of ways about specific schools and school systems, designed to provide a basis for an assessment of the work of the schools and for policy making. "Survey research", as it has developed in recent decades, is a distinctive set of research procedures that has been employed by social scientists in the study of a great variety of social institutions and processes over the past thirty years.

This confusion of "survey research" with "school surveys" (sometimes called "the survey method")is embedded in the textbooks on research methods in education, and is reinforced by the somewhat coincidental circumstance that school surveys often collect some of their information through questionnaires. A review of the discussions of "the survey method" in a number of widely used texts on research methods in education shows not one of them presenting the reader with a picture of "survey research" at all recognizable to the working social scientist. [1] Here is a typical illustration:

> "Surveys are conducted to establish the nature of existing conditions. The survey method represents research at a primitive level. It builds a body of fact that is usually of only local significance. The facts thus collected may contribute to the solution of immediate problems, but rarely do they develop a body of knowledge that can be used in solving future problems. Thus, the technique tends to be a one-shot method."[2]

A little further on, the same author assures the reader that survey studies are not "scientific," cannot produce an organized body of generalizations on which predictions can be made, cannot establish causal relationships, and leave the pollster with "little except the bare facts which form only a basis for speculation."[3] One looks for some reference to the literature on survey research to which these strictures are presumably directed, but in vain; in this, as in other recent texts on methods in educational research, there is scarcely a single reference to any of the important names associated with survey research, for example, Lazarsfeld, Stouffer, Human, or to any of the literature of empirical research and methodological commentary that centers on the use of survey method in social research.[4] The reader of these texts has no way of knowing that a powerful research tool, with an extensive empirical and methodological literature illustrating its development and employment in research on analogous problems, is available to students of educational institutions and processes.

If relatively little use has been made of survey methods in education, it is at least partly the result of the misconceptions of the nature of survey research current in the field, misconceptions which continue to be taught to the fledgling research people in education. And the historical accident that the term "survey research" in education means something quite different from what it means to social scientists, itself partly accounts for the backwardness in the development and use of survey research methods in education as compared with its use in the study of industrial, military, labor, political, and religious organizations.

If survey research is not what these authors of texts in educational research say it is, then what is it? The most visible characteristic of survey research is the nature of the data which consist of a large number of distinct items of information gathered from or about a large number of units; the units are usually people, but may as well be groups, schools, trade unions or other organizations. The information is usually gathered through self-administered questionnaires or through a highly structured interview schedule of questions, but the items of information can also be gathered from published records. These items of information--for example, the age, sex, grade point average, vocational and educational intentions, etc., of a sample of high school seniors--are usually coded and punched on IBM cards, which allows the rapid manipulation of the large volumes of data gathered by most surveys. (Incidentally, the development of survey research is inseparable from the development of the high speed business machines that process punch-cards and tapes on which the large quantities of data are recorded and stored.)

While the questionnaire and IBM card are the most visible marks of survey research, the aspects of survey research that make it of such great potential value to education are less visible. The great advances in survey research in recent decades have been in the analysis and interpretation of survey data, advances which have taken survey research considerably beyond the primitive stage of merely asking a lot of questions and reporting the answers. The chief gains have been in our ability to study the relationships between and among variables. And since a great part of social theory consists of statements about the relationships among variables under specified conditions, these developments in survey analysis open up the use of survey data for the testing and refinement of sociological theories of considerable scope and complexity. For example, the nature of the avenues of social mobility in a society is an important problem in the broad area of theory in social stratification. There is considerable evidence that in advanced societies formal education is increasingly the chief avenue of social mobility, both for individuals and for whole social strata. Thus it is a question of import for social theory as well as for social policy just what are the factors which affect the nature and extent of educational opportunities, and how great are the differential opportunities for children who start life in different strata of our society. Through survey research we can study, on a broad scale and under a variety of conditions, how the social origins of students affect their educational aspirations and achievement. Moreover, we can do this while simultaneously taking into account other factors, such as their academic aptitudes which also affect educational achievement. And we can see how these relationships change over time, and thus get indications of the direction of development of the society as a whole.[5]

Even more important from a policy perspective, since we can only rarely affect such characteristics of individuals as their social class origins or academic aptitudes, we can also learn through survey research about the influence of organizational characteristics, such as the size of the school they attend or the nature of its counselling program, which are more likely to be subject to purposeful control. For example, it is interesting to learn from a recent study that two-thirds of the seniors in the top ability quintile in a sample of American high schools went on to some college in the fall, as compared with less than a quarter of the students in the bottom quintile in ability. It is of considerably greater interest if we could learn whether the proportion of the top ability students who go on to college from large high schools is much higher than from smaller high schools, or whether a special program for gifted children in some schools raises this proportion of college-going as compared with schools where such a program is not offered. Here, we are dealing with characteristics of individuals--i.e, their measured ability level, and whether they enter college--and also with characteristics of schools and school systems--such as their size, and the nature of their curriculum. This kind of analysis, involving both characteristics of students and characteristics of the schools which we are able to modify purposefully, holds the greatest promise for the application of survey research to education. But analyzing survey data in this way is a far cry from simply asking people some questions and reporting their answers.

I would like to point illustratively to a few areas of education where I believe survey research can be of genuine use to educators by illuminating both the institutions and processes with which they are concerned. The first of these is the area of teacher recruitment and retention. A recent survey by Mason, Dressel and Bain[6] starts from the very practical problem posed by the growing shortage of qualified elementary and high school teachers at a time when the public school population is growing very rapidly. The teacher shortage would certainly be alleviated if fewer trained and qualified teachers left the profession for other work. The study addresses itself to the question of how teachers just beginning their careers view their professional futures; and more specifically, what are the characteristics of teachers who plan to remain in teaching as compared with those who are planning to leave the classroom even before they enter it as a teacher. The study, done by the U.S. Office of Education through a mail questionnaire to a representative sample (numbering about 7500) of all beginning public school teachers in 1956-1957, shows that fewer than a third of the men and fewer than one in six of the women expect to continue teaching until retirement. Half the men hope to move into educational administration, while well over two-thirds of the women hope to leave teaching at least temporarily for marriage and a family.

These findings have clear implications for the professionalization of teaching; we can understand better why relatively few teachers take the lead in the development and maintenance of standards through their own organizations when for so many of them, both men and women, teaching is merely a temporary job, a stepping stone to another career either inside or outside education. I would venture that theory in educational administration would have as a central task to deal with the distribution of power and authority in educational institutions, and with the conflicts that arise over the distribution of this power and authority. In every organization whose members are professionals or semi-professionals, there is an inherent strain between the principles of bureaucracy and colleagueship, which are shorthand terms for very different kinds of power relations among the members of an organization. And this is true in education as well. Anything which sheds light on the sources and weaknesses of professionalism within a group, as the Mason study does for teaching, also sheds light on the actual workings and administrative processes of the organizations in which members of that group work, and is thus a contribution to organizational theory.

But while the Mason study, done on a nation-wide basis, has broad implications for the recruitment and retention of teachers, and thus for the profession as a whole, it is at least as suggestive of additional research on the local level. For this nation-wide study does not tell us anything about the conditions under which the flow of teachers out of the classroom is especially low. Many school administrators would like to retain a larger proportion of their men teachers, and especially the better ones, in their classrooms. How can survey research contribute to this end? First, we would wish to compare schools and districts which differ markedly in their retention rates. There are certainly schools and districts where the turnover of male teachers is very high and others where it is much lower. When we make these comparisons we would, of course, have certain obvious questions in mind; we would certainly look into the possibility that in the high turnover situations average salaries and job satisfaction are lower than where the turnover is less. This may or may not be the case; in any event, this kind of comparative research can subject our hunches about the bearing of salary on teacher retention to some empirical examination. Further, we can explore the data for the operation of forces bearing on teacher turnover about which we now scarcely even have hunches. For example, the study by Mason and his colleagues supports the general impression that men teachers are especially concerned with the pay and working conditions of teaching, and that deficiencies in this regard lead many to plan to leave the classroom. But through comparative studies of schools and systems we may discover that, within limits, proportionately as many men leave teaching where the pay is good as where it is low, and that the appraisal of their own situations is based not so much on the absolute levels of their pay as on their comparisons of their own situations with that of others. For many male teachers, the "others" with whom they compare themselves are likely to be school administrators, who are largely recruited from male teachers and whose pay and status are very often much higher than that of teachers. It is an hypothesis worthy and possible of test that loss of men teachers from the classroom is related to the size of the differences in pay and status between them and their own school administrators. If this is so, the policy implication is that if it is desired to retain more of the most able male teachers in the classroom, the difference between rewards of teachers and administrators must be kept low--not necessarily by holding down the pay of administrators, but perhaps by providing an alternative channel of advancement within classroom teaching. While this is at the moment largely speculative, it is the kind of hypothesis with important policy implications that survey research could illuminate.

I have not thus far said anything about asking teachers why they leave teaching or whether they are satisfied with their salaries. A very common error in survey research in education has been to assume that the individuals in the situation could adequately account for their own behavior; and moreover, that by summing up individual answers to such questions we understand a trend or pattern of behavior. But a basic principle in survey research is that the question "why did Smith quit his job? is fundamentally different from the question "why is the quit rate at School A 30% annually while it is only 10% at similar School B?" These are two fundamentally different questions; it is the latter kind of question to which survey research properly directs its attention, and such questions cannot be answered by simply collecting a great many answers to the first kind of question about why Smith quit his job. Smith may have quit his job for any one of a thousand reasons or combinations of reasons, very few of which we can learn much about through a survey interview. But if the turnover rate in one school is three times as high as in another, the difference very likely flows from some differences in the schools as social systems, or the nature of the local community or the administrative staff, or the kinds of people recruited to the given school, and these are things we can learn about through survey research.

Now these are not easy things to learn about, but they are to a large extent independent of the idiosyncratic circumstances surrounding each individual case. If a given teacher tells us that she is leaving her job because her husband is being transferred by his company, we may know all we need to about that case, but we have learned almost nothing about the forces which make for high or low quit rates. We are not likely to learn much more even if we ask a thousand teachers why they are leaving their jobs, and present a summation of their answers, as is so often done, as an explanation of the quit rates. It is a mistake to assume that the individual respondents--whether students or teachers--whom we question can give us a useful explanation of differences in distributions of behavior to which they contribute but of which they may not even be aware. This is asking the respondent to do the analysis for us, and it is probably the single most common error for people doing research through survey methods in education. Individual respondents can tell us about themselves how they perceive or feel about something, how they act or how they plan to act; survey research is concerned with the rates or distributions of these perceptions, sentiments, behaviors, statuses, and the relations of these distributions to other variables. Through the close and patient study of many such relationships, the analyst himself attempts to arrive at an explanation of the phenomenon, a phenomenon which always takes the form of a difference in rates--in this case, of rates of teacher turnover.[7]

Let me illustrate what I have been saying by reference to another area of education--school counseling. Counseling, as you all know, has been the focus of considerable attention in recent years. In Conant's recommendations, counseling in the high schools is the major device for sorting students of different interests and abilities into programs most suitable to their talents.[8] And the very large sums allocated to counseling in the National Defense Education Act indicates the interest of the federal government in the role of counseling in identifying and encouraging talented students, especially those interested in the natural sciences. Now there have been many discussions of the philosophy of counseling, of the psychology of counseling, and of the problems of counseling as a profession. But it is remarkable how little seems to be known factually about the extent and variety of counseling in the schools, and above all, what effects different programs of counseling have on bodies of students. Here are some questions that could be answered by survey research, questions whose answers would be quite useful to counsellors themselves, and to people making policy regarding the extent and nature of the counseling program within schools and school systems. First, what is the range of counseling programs in effect in the country as a whole, or in a given state or city: for example, how many fulltime teacher counselors are there in the several systems in the area, and how great is the variation in this regard. Second, what do the counselors in the various schools and systems actually do in their counselling hours? I have heard it suggested that between 80 and 90% of the time spent by the counselors in one large city system is spent in clerical work. To what extent is this the case elsewhere, and what are the variations in this regard? Most educators could attempt an answer to these questions in a general way on the basis of impressions and hunches. But the kind of data I am speaking of reveals not just general tendencies but the range of variation in a set of practices, and our impressions about the variations in a practice are less likely to be as accurate as our impressions about the norm. Detailed and accurate knowledge about variations in the counseling programs of this kind would lead us to a more crucial question: what difference does it make to the students, to their academic careers in high school or thereafter, or to their vocational careers, what kind of counselling program a school supports? These, after all, are the central questions confronting any policy maker when he confronts alternatives, as we certainly do in connection with school counselling: namely, what difference does it make if we do this or if we do that, if we spend this sum, or twice that, if we spend our money in this way or for that?

Now I submit that for all that has been said about the supposed advantages of one counselling program or another, very little is really known about the effects of various counselling programs on the careers of students. And this is a problem especially amenable to survey research. One cannot, obviously, outline a study in the course of a sentence or two, but at the heart of such a study would be a comparison of a number of schools or school systems, comparable in various other respects, which differ markedly in their counselling programs. Holding constant the social class and ability levels of students, can we discern differences in the school achievement, levels of aspiration, college attendance or other aspects of their embryonic careers between groups of students who have had quite different experience in the extent or nature of the counselling to which they have been exposed? Notice that I am not recommending individual case studies, where the idiosyncratic and psychological variables are so strong as to obscure the influence of whatever counselling the child had in school. I am suggesting again a comparison of rates: do we, for example, find markedly high proportions of students above a certain measured ability level going on to college where the counselling program is extensive and oriented toward academic achievement as compared with situations where it is still largely a clerical task of making out programs? We may think there is this difference, we may hope there is, but I doubt if any of us really knows what difference the nature or extent of a counselling program in a school makes. Answers to that question would be of the greatest value to those charged with shaping the direction of the inevitably growing counselling programs in our schools. But, we cannot even ask these questions seriously if the basic information about the actual variety of counselling programs in effect is not available. Information of only "local significance" takes on important substantive and theoretical relevance if gathered comparatively, and if the right questions are asked of it.

Incidentally, those concerned with theory in educational administration might ponder the implications of an administrative situation in which important decisions of this sort have to be made with scarcely any firm knowledge about the actual consequences of such decisions for the central purposes of the organization. Two questions come to mind. First, in the absence of such information, on what basis are administrative decisions about counselling programs currently made? And second, what effect would the existence of such information have on administrative practice? The ways in which relevant information is assimilated, used, or ignored by an organization is itself an important question for administrative theory and research. The relation of survey research to educational practice is not simply a matter of making its findings available to school administrators; and the intervening processes, the ways administrators use or do not use the findings of empirical research, are themselves appropriate subjects for survey research within the administrative staffs of schools and school systems.[9]

A third area where survey research may be of great potential value to education is in the study of what we may call the climates of schools, the systems of values and norms created and sustained by the students themselves. We all know that a student's performance in school is shaped not only by his natural abilities and intelligence, but also by his values, interests, work habits, and the like which are heavily shaped by his home environment. We are now coming also to recognize that students are influenced not only by their home environments but also by their peers and classmates. For example, where the majority of boys in a school think it is square or sissy to be deeply interested in the course work, it is very difficult for an individual boy to ignore or resist the many informal but powerful pressures placed on him by his peers, pressures which work against a serious commitment to academic studies. Of course we all know boys who effectively resist such pressures and go on to do first rate work in school, earn scholarships and the like. But we know much less about the students who are potentially able students, but whose interests are deflected and suppressed by the hostile climate by which they are surrounded. Recent studies based on survey data by Alan Wilson at Berkeley[10] and James Coleman, of Johns Hopkins,[11] seem to show how these peer group climates affect the attitudes and the school performance of their members. This is a relatively new but highly promising area of research, with many implications for educational policy. Wilson's work suggests that differences in the social class origins of school populations that flow from the residential patterns of many areas have marked educational consequences that have not been sufficiently taken into account in locating schools. His work carefully refrains from making policy recommendations, but it provides the kind of information that educators should have in making their long range educational plans. Coleman discusses in great detail the various kinds of peer group cultures--and especially the pressures they exert against high academic performance--that he finds in a number of midwestern high schools. And his findings also point to possible administrative action aimed at enlisting the power of peer group influences in the service of the chief purposes of the school.

I have selected for brief mention only three out of the innumerable areas of education where survey research could make a useful contribution, both to basic knowledge about our education systems and also to educational policy and practice. Survey research has behind it some thirty years of development; it has made major contributions to our knowledge about politics, industry, military life, community organization, child rearing and many, many other areas of social life. And it is now beginning to be used to illuminate educational processes as well. Survey research involves skills and techniques, and especially modes of thought, that have to be learned. Extremely useful work can be done by people without lengthy specialized training, but some formal training in the design of survey research and the analysis of survey data, and certainly some familiarity with the literature of survey research methods, are prerequisites for research of the kind I have been describing. But the bulk of research now carried on in education involving the structured questionnaire administered to large numbers of people involves little more than asking people questions and reporting their answers. Survey research of this kind is simply reduced to a mode of data collection, with little or no thought given to the analysis of the data. Ironically, schools comprise an almost ideal circumstance for gathering survey data; students and teachers present convenient, captive, compliant, and literate populations whose members' daily round includes taking tests and answering questions. The very ease with which almost anyone can collect a body of survey data in the schools makes it perhaps too attractive to graduate students and others wishing to do research in education. But this apparent economy and ease is misleading, for survey research is far more than just asking people questions. If survey research is to be more than just a ritual collection of responses, if its potentialities for answering important questions in education are to be realized, then the skills of survey design and analysis must become more widely known by research people in education; and perhaps the first changes have to be made in the text books of research methods in education. By a familiar kind of self-fulfilling prophecy, these texts help ensure that the kind of survey research which they hold in such low regard continues to be done, since they nowhere suggest any better alternatives.

Many colleges and universities are now providing both training and assistance in survey research--for example, the University of California at Berkeley has in the past few years created a Survey Research Center which is devoted exclusively to carrying on survey research in many areas, while contributing to developments in survey techniques and research methods. People from these and other centers of training will be increasingly available in the future both as research people and as consultants to educators who have problems for which survey research is appropriate. The application of survey methods to many problems in educational administration holds great promise, as it has already made great contributions to the study of organizations in other areas of life. But here, in the realm of research methods as in the development of theory in educational administration, it may be wise to make haste slowly.

Finally, at the heart of any piece of research lies a problem or a question we want to answer and not a research technique. Survey research is a way of gathering and analyzing data that can be applied to good advantage to many problems in education, but

I believe its most fruitful use will be in conjunction with other kinds of information gathered and analyzed in other ways. Historical documents, statistical records, personal and participant observations in school situations, informal and intensive interviewing--all provide information of a sort that surveys can collect poorly or not at all. In research, the decision about what kinds of data are needed and what kind of methods should be used is as important as is skill in the use of a particular method. The enemy of enlightenment here is a mechanical and unreflective commitment to a given mode of data collection and analysis, whether it be the experiment or survey or participant observation, without regard for the appropriateness of that method to the problems in hand. Each of these methods has certain strengths and certain limitations, which is why they are often most effective when used in conjunction with one another. My purpose here is not to sell survey research, but to urge that its particular strengths and potentialities become more widely known to educators, so that it may also make its contribution of knowledge to theory and practice in education.

FOOTNOTES

1. The texts reviewed were: Good, C. V. and Scates, D.E., *Methods of Research, Educational, Psychological, Sociology*, N.Y.: Appleton-Century-Crofts, Inc., 1954; Good, C.V., *Introduction to Educational Research,* N.Y.: Appleton-Century-Crofts, Inc., 1959; Barr, A.S., Davis, R.A., and Johnson, P.O., *Educational Research and Appraisal* N.Y.: J. B. Lippincott Co., 1953; Rummel, J.F., *An Introduction to Research Procedures in Education,* N.Y: Harper and Bros., 1958; Smith, H.L., and J.R., *An Introduction to Research in Education,* Bloomington, Ind.: Educational Publications, 1959; Travers, R.M.W., *An Introduction to Educational Research,* N.Y.: The Macmillan Co., 1958; Whitney, F.L., *The Elements of Research,* N.Y: Prentice-Hall Inc. 3rd edition, 1950.

2. Travers, *op.cit.*, p. 231.

3. *Ibid,* p. 237.

4. For example, a text published in 1959 solemnly advises the student that: "Generally, in formulating the questions [in a questionnaire], only facts should be requested, not opinions. Opinions do not lend themselves to tabulations or generalization and are difficult to handle in a study." (Smith and Smith, *op.cit.*, p. 205.)

This astonishing position,it is clear, was not arrived at after a critical review of the literature on opinion research, but rather in ignorance of that literature. See, for example, P.F. Lazarsfeld and Morris Rosenberg, eds., *The Language of Social Research*, Glencoe, The Free Press, 1955; Herbert Hyman, *Survey Design and Analysis*, Glencoe, the Free Press, 1955; and F.F. Stephan and P.J. McCarthy, *Sampling Opinions*, John Wiley & Sons, N.Y., 1958.

5. See, for example, the studies cited in S.M. Lipset and R. Bendix, *Social Mobility in Industrial Society,* Berkeley: University of California Press, 1959.

6. W. S. Mason, R. T. Dressel, and R. K. Bain, "Sex Role and the Career Orientations of Beginning Teachers." *Harvard Educational Review,* 29, 4, Fall, 1959, pp. 370-383.

7. The respondents' perceptions or definitions of the situation may be an important datum in the analysis, but if should not be a substitute for the researcher's own analysis or explanation of the phenomenon to which he addresses himself. How valid or adequate that explanation is is dependent on many things, both in the study and outside it, but it is always to some extent partial, provisional, and tentative. I need scarcely say that a research finding can never replace the administrator's assessment of his own special situation, since much more enters into his decisions than any single study can take into account. But this leads into the subject of the proper relations of research to educational practice, and beyond the subject of this paper.

8. James B. Conant, The American High School Today, McGraw-Hill, New York, 1959.

9. We might note that research of this sort, like the research on the distribution of power and authority in schools mentioned earlier, would provide the empirical basis for the development of theory in educational administration that is so sorely needed. Moreover, research of this sort has the virtue of simplicity; it does not involve the immensely complicated conceptual schemes (with all their attendant operational difficulties) that have characterized much of recent writing about theory in educational administration.

10. Alan B. Wilson, "Residential Segregation of Social Classes and Aspirations of High School Boys," American Sociological Review, Vol. 24, No. 6, December, 1959, pp. 836, 845.

11. James S. Coleman, The Adolescent Society, The Free Press, Glencoe, Ill., 1961.

EXPERIMENTS, STUDIES, SURVEYS AND INVESTIGATIONS[1]

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We may define research as a process of inquiry which meets two conditions: (1) careful control, that condition which prevents the operation of non-relevant, confounding factors, and (2) proper sampling, that condition which permits the extension or generalization of the findings of the inquiry. The first of these conditions assures that the research will have internal validity, while the second condition assures that the research will have external validity. We may think of any particular research as having or not having internal validity, and as having or not having external validity. The four possible combinations of research defined by this rubric I shall term experiments, studies, surveys, and investigations. I would like to consider the characteristics of these four classes of research and to point out that each has its own unique advantages and disadvantages. I do not wish to imply by the preceding statement that there are times when the absence of either internal or external validity can be condoned, when these problems are the crucial issues; I would like to state that there are times when one or the other of these questions is not critical.

Before dealing with this problem, however, I should like to describe in greater detail just what I will mean by internal and external validity. Let us begin with the former concept. Generally speaking, all research is carried on in terms of variables. The variables in any research are simply the dimensions which are being studied. So, for instance, one may study the personality variables of teachers, (e.g., honesty, forthrightness, and loyalty); the behavior patterns of teachers in the classroom; and the like. Unfortunately, the scope of any research cannot be limited simply to those variables in which the researcher has interest; there are always other extraneous variables that interfere. You can think of this interference as analogous to radio static. The object of the research game might be said to be to differentiate the variables of interest from the extraneous or "noisy" variables. To these interfering or "noisy" variables we will apply the technical term "confounding variables." The variables of interest to us we may call by the term "information" or "experimental" variables.

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[1] The author acknowledges his great indebtedness to the paper by Leslie Kish, "Some Statistical Problems in Research Design," American Sociological Review (24 1959), 328-38. Much of the terminology and a great portion of the conceptual base of this paper have been borrowed from this source.

In any particular research what is defined as an information variable and what is defined as a confounding variable is entirely arbitrary, depending upon the nature of the research. Let me illustrate this with a homely example. Suppose you are sitting at a summer lawn party at your home, entertaining guests at bridge. You hear the sound of crickets in the background, the laughter of the people sitting around the tables, the buzzing of insects, and the traffic sounds in the street are all extraneous noises that you would like to filter out. Suddenly you hear a thump and a cry--at least you think you hear them, but you are not quite sure. You wonder immediately whether the baby sleeping in the house has fallen out of bed and perhaps injured himself. Thus, you are no longer attending to the conversation at your table, but to a sound somewhere off in the distance--the sounds of the baby crying, or other sounds which would lead you to confirm or refute the hypothesis that the baby has fallen out of bed. Under these circumstances, the conversation at the table, to which you were attending so intently a moment before, now becomes a noise which you would like to screen out so that you can attend to the sounds of the baby. Thus, what is information and what is confounding noise at any given time is a matter determined entirely by your purpose.

It is possible to deal with confounding variables in two distinct ways. One way to deal with them is by means of appropriate experimental controls. For example, if the research you are conducting is likely to be influenced by the intelligence of the subjects involved, it may be possible to match subjects in terms of intelligence scores. A second way of dealing with confounding variables is by means of randomization--a statistical practice. Randomization does not get rid of confounding variables nor does it control them in any way. The confounding effects remain in force and influence the research as they normally would. The randomization process, however, gives us an opportunity to assess the size of the confounding effect and to take it into consideration in making our interpretation.

We may thus think of any research as having to deal essentially with four classes of variables: (1) information or experimental variables, (2) confounding variables, (3) controlled variables, and (4) randomized variables. I will assert that the object of experimental design is to eliminate confounding variables by converting into either controlled or randomized variables. Ideally, of course, we should like to control all possible sources of confounding, but this is not physically possible nor within the limits of resources usually available to researchers. Every research, therefore, retains some randomized variation, which means in effect that the "noise" is still there to disturb us. However, under certain circumstances, it is possible to get an estimate of the amount of error involved (the amount of noise). Statistics is, in fact, the science of comparing the variability of information variables to the variability of randomized or error variables. Thus, the basic statistical idea is very simple: if information variation is only of the same size or order as the random variation, there is no basis for supposing that what we presume to be information variation is anything other than random chance fluctuation. If, on the other hand, the size of the information variation is sufficiently larger than our estimate of the random variation, we have some basis for believing that the information variation is "significant." If experimental design is, then, the process of converting confounding variables into controlled or randomized variables, statistics is the process of comparing information variance to randomized (i.e., "uncontrolled") variance.

I will assert that an inquiry has internal validity if (1) all confounding variables have been converted into either controlled or randomized variables and if (2) the research is designed in such a way that it is possible to make an estimate of the size of the random variation so that the experimental variation may be tested (i.e., compared to it) against it for significance. Please note that in the social sciences at least these conditions are almost impossible to accomplish. There are always so many confounding variables, and our ability to deal with them is usually so inadequate that there is almost always some confounding variation remaining. Hence, internal validity is almost always in question.

Let us turn now to the problem of external validity. By external validity we shall simply mean that the experiment is being conducted in such a way that we can describe a priori the population to whom the results will apply. This implies that the population has been defined before the fact and that the sample has been selected from that population by scientific probability sampling methods.

We may note that this practice of random sampling involves at least two elements, one of which is often overlooked to the detriment of research. When we talk about randomization of a sample we mean not only that the sample was randomly selected from the population to which we wish to generalize the results, but also that the subjects in that sample are randomly assigned to the experimental treatments. Both factors-random selection and random assignment-are essential.

Let me give you an example of the effect that may be felt if the latter element, random assignment, is overlooked. Suppose that we wish to test the hypothesis that membership in Boy Scouts affects subsequent citizenship habits. Is it true that boys who have been in Boy Scouts turn out to be better citizens? A typical approach to this problem would involve the selection of two samples; one group of adult males who had been members of the Boy Scouts, and a second group of adult males who had not been members. It is thus assumed that if we select a group of subjects at random from among those who have been in scouting and another group from among those who have not been in scouting, and then compare these two samples in terms of some criteria of citizenship, that we have performed an adequate test of the hypothesis.

But obviously, the criterion of random assignment has not been met: the subjects themselves elected to become or not to become members of the Boy Scouts. Thus, we might presume (and probably rightly so) that whatever the factors were that induced or motivated boys to become Scouts in the first place may also very well be the factors that influence their subsequent interest as men in citizenship activities. A fair test of the hypothesis could only be made if we started out with a "neutral" pool of subjects, some of whom were assigned to Boy Scouts and some of whom were not. We would then need to follow them over a sufficiently long time period into their adult lives in order to get some adequate measure of whether or not the scouting experience did in fact influence their civic interest.

The kind of research that I have described in this example is what is usually termed "ex post facto" research. It is sometimes assumed that the deficiencies of the method can be eliminated if the subjects in the two groups are matched on some presumably relevant factors. Thus, if we select subjects on the "Scouts" and "no Scouts" group on the basis of matching intelligence, age, socio-economic background, etc., it is often assumed that the groups may be thought of as comparable so that the problem is obviated. Nothing could be further from the truth. No amount of such matching can result in equivalent groups on the crucial variable, civic interest or community spirit, since it was exactly to test this variable that the groups were divided in the first place.

We are ready now to return to our original problem: the definition of four classes of inquiry. The definitions are schematically represented in Table I. In this table I have used the symbol "C" (control) to indicate that the class meets rigorous criteria of internal validity. I have used the symbol "S" (sampling) to indicate that the inquiry meets rigorous criteria of external validity. The symbols "+" and "-" will indicate the presence or absence of "S" or "C". The four classes of inquiry shall be labeled as indicated in Table 1: the S-C- situation we shall term an investigation, the S+C- situation we shall term a survey, the S-C+ situation we shall term a study, and the S+C+ situation we shall term an experiment.

If you ask the statistical purist what is good research and what is bad from among these four levels, he will tend to draw the line at the place that separates experiments from the other three levels. This is the usual stereotype, and a stereotype which I would wish to destroy, if possible. Many critics would assert that unless it is possible to have completely adequate control and completely adequate sampling, it is not possible to obtain anything meaningful from an inquiry. My own feeling is that each of these four levels does have some utility. The conclusions that can be drawn from these four levels are obviously not the same, and the most grievous errors come from conducting the research at one level of inquiry, but drawing conclusions as though it were another level. Such practice I am of course, not condoning. But I am saying that useful results are possible for certain purposes from each of these four levels. Let us see what each might be.

First of all, let us start with what the purists would term the least adequate form of inquiry, the so-called investigation. This is probably the most typical form found in educational research, and consequently all of us feel a little tender when we find that this form of research is characterized as entirely inadequate. I would like to point out that much of educational research takes this form, not because we do not know better but because the situation in which we work forces us into this form of design. We usually have to settle for a convenient sample, and I need hardly point out that it is someone else's convenience rather than our own which is suited. We must work in schools where they will have us, under conditions which are prescribed by the administrators of that school. We cannot rearrange classes, we cannot rearrange schools, we cannot make principals stop acting the way they do. These are simply the circumstances under which educational researchers must work.

Table I

DEFINITIONS OF FOUR CLASSES OF INQUIRY

Presence Of		Class
S*	C*	
-	-	Investigation
+	-	Survey
-	+	Study
+	+	Experiment

* S (sampling) indicates meeting criteria of external validity; C (control) indicates meeting criteria of internal validity.

If these circumstances are indeed inevitable, would we not be well advised to cease doing research altogether? And are not data collected under such circumstances worse than no data at all? Can anything really be derived from such an unrigorous situation? Now, if by "anything" we mean scientifically defensible findings which we can purport hold true everywhere and for all time without exception, then obviously such inquiry will yield nothing. But if we mean findings which are suggestive rather than conclusive, heuristic rather than definitive, we may have a great deal to learn from such an inquiry. And, of course, we should not overlook the fact, which is perhaps the most oustanding characteristic of this form of research, that investigations are carried out in entirely "natural" settings with no artificial laboratory situations to intrude upon what is observed. Such an inquiry deals with the world as we find it, in its own setting, and on its own terms.

The difficulty with investigations, it seems to me, arises not so much from any innate deficiencies in the form of inquiry as from the misuse of data which result from it. An investigation is not an experiment. We are not sure the results can be generalized. The results are not so adequately controlled that if we were to repeat the investigation in a different setting we could expect to replicate them exactly. But, if we treat the data as illustrative of the kinds of things that might be observed, or if we think of an investigation as a pilot study which yields some insights into the kinds of problems that might be encountered and which could be studied in detail in a more elaborate design in a different situation, then investigations may be of great value. Or, if we treat the data as heuristic, that is, furnishing a convenient jumping-off place for more detailed and rigorous research, investigations can be very helpful. We need not be ashamed of publishing data of investigations so long as we do not pretend that we have done an experiment and that the data will hold everywhere for everybody.

Of course, I realize that we all live under a "publish or perish" dictum to some extent, and we would like to have our publications look as slick and polished as we can. We hesitate to admit inadequacies like convenience sampling, although sometimes we may squeeze in a short sentence that says, "No claim is made as to the representativeness of the sample." Statements of this sort ought to serve as warning signs to the reader, signs which in effect say, "Caveat emptor." The problem then is not so much that investigations are done but rather that they are misinterpreted if one is not careful.

Let us move now to the second situation: surveys. In this case, our sampling may be adequate although our experimental controls may not be. Very often this level of inquiry is entirely adequate when we are interested simply in descriptive or normative data. A typical case might be, for example, to determine the average I.Q. of children in the Cleveland Public Schools in grade five. In this case, we have a well-defined population, all fifth graders. It is possible to get a complete listing of all the children involved and to apply random sampling procedures to pick a group for actual study. From this group we can get information about the average I.Q. which is quite generalizable to the Cleveland School system as a whole.

Thus, in order to establish norms for a group, or in order to describe the parameters of a population (by parameter, I mean the characteristics of the population which define it), the survey is entirely adequate. So long as we are not trying to study cause and effect relationships, surveys are perfectly appropriate. I need hardly add that attempts to study causal relationships or to test hypotheses utilizing surveys are entirely erroneous.

What about an inquiry at the level of a study? In this particular situation, the sampling may be inadequate but controls are likely to be excellent. Where might this have some utility? There are times when the problem of sampling is not relevant because the only group of interest is the sample which you happen to have at hand. A typical situation is that of classroom evaluation. Let us suppose that you have 300 students in a beginning psychology course, and you're concerned whether or not the objectives of the course have been achieved with that particular group. The sampling problem of course is not germane: the curriculum is being used in this particular school with this particular group, and we are not terribly concerned at this point whether the results of the evaluation are applicable elsewhere or to other groups. What is of concern is to control the variables which might make a difference in the judgment of the extent to which the objectives of the curriculum are being met. Thus, a study situation would be perfectly appropriate here.

At other times we may be interested in testing some methodology, e.g., trying out a new personality test. We are probably not concerned at this level in generalizing the results, but simply in getting a gross idea of whether the methodology is understandable and whether it yields results which are roughly in the area we had hoped. All we are trying to do at the moment is to perfect the instrument and we want to get data as easily as possible to provide us some insights in this process. For such preliminary methodological inquiry, the study may be entirely relevant.

Now,finally, let us consider the experiment. The experiment requires, you will recall, that rigorous conditions of both internal and external validity be met. As I shall try to make clear below, the achievement of the condition of rigorous internal control may under some circumstances make it impossible for conditions of external validity to be rigorously maintained. However, we shall consider this point later.

The experiment is classically the ideal form of research design. This kind of design is usually intended to answer cause and effect questions. It is desired to manipulate certain factors in order to study the influence of these factors upon other factors. The experiment in its classic form is the only way that we know in order to answer unequivocally questions of causation. Experiments are also required if we wish to establish the extent of differences on certain variables between two groups. So, for example, we may have taught spelling by two different methods to two different classes and we would like to know which of the two methods is superior. Thus, problems involving questions of causation, or the estimation of differences between groups, require rigorous experimentation for their answer.

Each of the four types of inquiry then has certain virtues. An "experimental" type of inquiry is strong in the sense that it permits us to test cause and effect kinds of hypotheses, or to estimate the extent of differences between groups. At the other end of the continuum, the "investigation" type of inquiry is strong in that it permits us to study elements in their natural circumstances. The "study" type of inquiry is strong in that it permits us to deal very adequately with questions relevant only to the particular group in hand, as in the evaluation situation. The "survey" type of inquiry is strong when we wish to obtain normative or descriptive information about groups that are not concerned with cause and effect relationships that might exist between these two groups, or with tests of hypotheses.

The problem in dealing with these forms of inquiry comes then not in applying one of these for a particular purpose to which it is suited, but rather in assuming that when we apply it for one purpose, the results may also suit some other purpose. We can fall victim to any of several pitfalls if we do not distinguish clearly among the four levels. Let us see what some of these might be:

1. We must be clear that when we are doing an investigation, the data will not have the rigor that is obtained in the experiment. Therefore, the data of an investigation cannot in any sense be treated as conclusive. The very best that we can say about them is that they are suggestive or heuristic. In this situation, the oft-heard phrase "more research is needed" is most appropriate.

2. The data derived from experiments, studies, or surveys are in one sense, at least, laboratory data and are rarely "natural" data. Special circumstances are often required. We may have to inject the subjects with a hypodermic needle, or expose them to unusual tests, or to do any of a host of things which are quite different from the circumstances which these subjects normally encounter. Data collected under these circumstances have lost the quality of naturalness. We can never be sure to what extent the results are due to the manipulations of our procedures and to what extent they are due to the real experimental factors. We might say, then, the conclusions may apply only to the sample rather than to the population that the sample is supposed to represent.

3. Surveys specifically answer questions about *what is* rather than *why it is so.* Surveys are inappropriate to the latter type of question, despite the fact that surveys are often utilized when such questions are to be answered. Survey techniques will not deal with cause and effect relationships, although they may be used to detect the existence of such relationships. We may, for example, do a survey to see whether there is a correlation between intelligence and schooling achievement. But note that when this survey is completed, all we will know is whether or not a relationship exists between, say, grade point averages and intelligence test scores. We have no way of judging whether or not the relationship is a cause and effect one. Such misinterpretation is one of the most frequent blunders encountered in the research literature.

4. Finally, I would like to amplify my statement that at times the goals of setting adequate experimental controls and obtaining a rigorous scientific sample interfere with one another. Several years ago, a study[2] was conducted in Cincinnati by some researchers who were interested in the impact of mass media upon people's thinking about the United Nations. What they proposed to do was to blanket Cincinnati with an array of radio spot announcements, advertisements in the newspaper, flyers and handbills, advertisements in the movie houses, and the like. The issue was to determine how much of this information was absorbed by the recipients.

   Just prior to the publicity campaign, a sample of a thousand Cincinnati residents was carefully selected by adequate probability methods to be interviewed in order to determine what the present state of knowledge about the United Nations was among Cincinnati citizens. Following these initial interviews, the publicity campaign was conducted over several months. Subsequently, a second sample, different from the first, was interviewed in order to determine what the status of knowledge about the United Nations now was. The results were quite disappointing: the second sample knew relatively little more than the original sample. Apparently, the information disseminated so carefully about the United Nations had almost no impact.

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[2] Star, S.A. and Hughes, H.M., "Report On An Educational Campaign: The Cincinnati Plan for the United Nations," *American Journal of Sociology*, 55 (1950), 389-400.

At this point, the researchers decided to reinterview the initial sample in order to determine whether there had been any gain in this group. The results were astounding; the original group had absorbed a great deal of the information and were able to make wide use of it. Apparently, the fact that they had once been interviewed about the United Nations so sensitized them to this area of knowledge that when the information was disseminated via the mass media, these subjects attended to it, learned it, and made applications of it. This phenomenon has come to be known by the name "interaction," a term which simply implies that the subjects may so interact with some part of the experiment that the data resulting from the inquiry are not applicable to any group except a group which has had a similar opportunity to interact. To put it another way, the external validity of the experiment is destroyed: the findings are no longer generalizable except to another pretested, pre-interviewed, or otherwise pre-exposed group. Thus, the institution of internal control can sometimes destroy the external validity of the sample, so far as generalizing to a given population is concerned.

* * *

Let me, in summary, briefly capitulate my points. I have pointed out that there are two questions which one can ask about any inquiry: are the data valid, and to whom do the data apply? The first is a question of internal validity and the second of external validity. Inquiries can meet either, neither, or both of these conditions, that is, internal or external validity. Table I illustrates the four possible combinations that arise and applies a name to each type of inquiry. We have said that each type has some utility for answering certain kinds of questions. We as researchers need not feel guilty or ashamed about utilizing any of these four levels, provided they are suitable to the questions we wish to answer. So long as we keep our wits about us and do not act as though every form of inquiry were an experiment, there is no occasion for us to feel inadequate. On the other hand, we must be aware that a variety of errors can be made in interpreting each kind of inquiry, and I have tried to list some of these more common errors.

SECTION IV

Recruiting, Training and Developing Educational Administrators

UNIVERSITY LEADERSHIP IN THE DEVELOPMENT OF RESEARCH PERSONNEL IN EDUCATION

Virgil E. Herrick
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It is the thesis of this paper that the time period which extends from the date of the first appointment of an individual to a university faculty to the date of his official retirement marks a neglected period in our thinking about the ways in which the university may contribute to the development of research personnel in education.

It is not argued here that it is unimportant to concern oneself with the design of graduate programs of instruction whose function it is to educate high quality research workers in education. Neither is it proposed that we should ignore the importance of the selection and recruitment of persons of excellence for such graduate experiences. The position of this paper is that the capacity of a university to attract high quality students, to develop imaginative graduate programs of instruction, and to implement these programs in the lives of its graduate students depends on a number of related variables. These variables are: a) the quality, vision, and value commitments of the staff charged with the responsibility for such programs; b) the quality and accessibility of the necessary resources for superior scholarly work; c) the nature and extent of the value commitment of the department and university to research; and d) the extent to which this pattern of variables is maintained at a high level over any given period of time.

It is also the position of this paper that the university has superior qualifications as a place in which to educate research workers in education. Because of the very nature of education and of educational problems, the quality and range of a university's resources are necessary to their adequate study. The spirit of scholarship and freedom of inquiry of a university is necessary to promote creativeness in problems researched in methodology of analysis. The university's time perspective of the future permits individuals to take the long view of what is necessary to deal adequately with important educational problems. The capacity of a university to attract qualified students and staff over an extended period of time will be superior to the capacity of more isolated research institutes, state and federal bureaus, public school systems, and liberal arts and teacher's colleges. The university can hardly escape its role of leadership in the development of research personnel in education.

The university may assume the leadership role in recruiting and developing educational researchers in a number of ways:

1. By searching out and encouraging well qualified individuals to attend programs of graduate instruction which have a high research emphasis.

2. By developing high quality graduate programs of instruction with this emphasis.

3. By searching out and selecting for university staffs topflight personnel with strong commitments to the need for constructive contributions to educational problems.

4. By developing the resources, conditions, and atmosphere which continues the research development of these individuals over the full period of their professional careers.

5. By contributing the university's experience and thinking about the research process and personnel development to the counsels of foundations, state legislatures, the U.S. Office of Education, learned societies, and the Congress of the United States. If this is the market place where decisions about educational research are made, then we must join with those who make them.

These leadership roles are obviously related; numbers three and four, however, are of prior importance for if the university does not play these roles with great competency, the rest cannot follow with any chance for long time success.

Our problem, then, is how the university can induct and continue the development of staff personnel in educational research. I would like to use my own State University as the source of my illustrations, not because it is the perfect model, but because it furnishes one concrete source of experience from which to draw some tentative generalizations. In this task, our efforts, both good or bad, serve our purpose equally well.

The Conception of the University

One suspects that the true image of the university is neither as a collection of scholars pursuing their loosely organized ways nor as a tight visible "corporate unity" with clear-cut parts and over-all educational functions. The truth is probably closer to the image of a dynamic organization constantly evolving from the action of the forces growing out of the concerns and activities of individual and small groups of scholars, the demands and stresses of the university structure which relates their activities and gives them home and the concerns and forces operating in the state, nation, and world which brought the university into existence and which nurtures its continuance. Most individuals would put the last stated force first. The writer merely would like to argue for all of these forces operating in various patterns of interaction to produce the changing image of the university, and that all of these forces must be considered in examining the problem of developing research workers in education.

Universities commonly talk about their educational functions as being teaching, research, and service. Different universities place these functions in different orders of priority and define service in different ways. Some see service as being related to extension programs, working with actual school systems on their educational problems, and the development of all kinds of off-campus activities. Others see the university serving its people best by bringing the greatest possible quality to its teaching and research activities.

The point here is not the need for a simple choice among these three functions but the much more difficult one of the nature of the relationships among them which properly promote the unique contribution of the research process in its broad and comprehensive meaning.

As a State University, we boast that the "borders of our state are the boundaries of our campus" and much effort has gone into making this notion one of the concreteness and significance. Yet we all know that the graduate and research program of the university must draw its students and problems from the world, and that its field laboratories must encompass the problems of man wherever they exist. Yet all of us know only too well the resultant problems of state financing; how to maintain balance in local, state and international activities and staff, and how to decide the extent to which state, private, and federal funds should support the essential functions of the University. The hard fact is that at my own institution without the additional assistance of the Wisconsin Alumni Research Foundation, private, foundational, and federal funds for research and facilities we would soon become a second class University. No university, public or private, can maintain first rate quality in research without this broad base of assistance.

This brief look at the image of the university suggests the following for our problem:

1. The research enterprise and training programs in education cannot be nourished solely by a department of education or limited to the problems defined by the geography of a state.

   Because of its peculiar nature, education as a social function or as an institutional responsibility demands the contribution of many disciplines and methodologies. To see education as existing only within the context of a single discipline or within the context of a single educational institution or vocational application is shortsighted. Programs of research or research training in education making these same artificial distinctions are equally limited and inadequate.

2. The structure of the educational organization of the university and its administration provides the context within which educational research and training programs take place.

   Suitable modifications and improved communications must take place between all parts of the university, the department of education, and the central administration before programs of research and training in education can reach full development.

3. The active research program of the university must be related to as significant and as fundamental problems in education as possible. The findings of such research, however, should be field tested on a local, state, and national basis.

4. The research and training program of the university must have a comprehensive base for its adequate and long time financial support. One limited source is obviously inadequate--be it state, private, or federal funds.

   Because of the national significance of such programs, does this argue for broad program grants for research and training programs in education to selected universities? This would permit the development of long time research plans, the attracting of topflight graduate students and staff, and the development of adequate research facilities. Without this kind of support we are limited to day-to-day planning and month-to-month existence.

Program of Development of Staff Personnel in a University

The university invests from one-third to one-half of a million dollars in the full career of a single university professor. Unfortunately, our attention is focused mainly on his identification and selection, and on the period preceding his appointment to a tenture rank; then we leave the major portion of his university career to his individual efforts to continue his development and to the subtle and complex motivation and controls existing within and without the university hierarchy.

The realistic down-to-earth program of staff development of a university is not found in counseling and evaluation programs but in the nature of the decisions made about the role and priority of research in the department of education and the university and in the way opportunities and facilities are provided for the advancement of the research effort of every staff worker. For most of us, good words, sympathy, and understanding do not speak half so loudly as time, facilities, and continuous long time commitments to a research enterprise.

Role and Conception of Research as an Important Function in the University

In the development of research personnel in a university, a number of important decisions are made which influence this development directly but which are frequently not perceived in this fashion by the staff. It is argued here that the staff of a university should be very conscious of these decision points and what their consequences are for the development of more effective research programs. These choice points are:

1. The place and priority of the research function in the work of each staff member.

   The position of my own University is that the functions of teaching, research, and service are both the related functions of the University and that of an individual staff member. It is felt that these functions mutually support and enrich each other and should not be seen in isolation. From time to time an individual may spend most, if not all, of his time on one or a combination of these function, but it is not expected that any major staff person will see his responsibilities restricted to only one function on a permanent basis.

Determining the function of highest priority is a decision seldom made on any realistic basis. Most staff persons would argue that performance only in one area of responsibility--research and/or scholarly contribution--is what distinguishes the work of one staff member from another and thus has highest priority in determining what he does. University officials presenting the University budget to the State Legislature frequently stress teaching and service as having highest priority. Thus, the long, never-ending attempt to see the proper relationship among these important functions goes on.

2. The participation of staff in both undergraduate and graduate teaching.

A second area of decision in many universities is whether a staff person is to teach in the undergraduate or graduate program. It is thought that some kind of training or induction period is necessary before young staff members can become competent enough to handle graduate courses and to direct the work of master's and doctorate candidates.

In our own University, all assistant professors having a Ph.D. and serving as full-time members of the Department are members of the graduate faculty of the University and thus are eligible to teach at both the undergraduate and graduate levels and to start their programs of research and scholarly work immediately.

It is proposed here that this comprehensive opportunity to be a fullfledged member of the University staff removes an important obstacle to the rapid induction of young staff into the research function of the University. Others will argue that unless some restriction is placed on who may be on the graduate staff the quality of work in the graduate program will deteriorate rapidly. Our experience does not indicate that this is so. My experience at universities where restrictions are practiced suggests that this staff distinction is a good way to maintain the status quo and to limit severely the imagination and resourcefulness of the research effort.

3. The nature of the program and responsibilities to be assumed by the young and the more mature members of the department.

The practice at many universities is to load young staff persons with heavy teaching assignments, many committee responsibilities, and suggestions "to get acquainted" with the state. The older members of the staff at the associate and full professor level are then permitted to have greater freedom in relating their program of activities to the function they wish to serve.

As much as many of us enjoy this privilege, the university is not exerting its leadership responsibility in the development of research personnel if the work loads of all individuals are not related to important educational functions and to the abilities and concerns of the individual staff person. The young staff member in terms of his long time development needs more freedom, not less, to study, to investigate and to try himself out in the research enterprise of the university under conditions of relatively low tension and anxiety.

The ways in which young staff members are encouraged to develop research interests of their own are:

a. The enforcing of the unwritten rule that no professor works under the direction of any other member of the staff. Individuals work with, not for, other faculty members. No young staff member becomes the flunky of a status figure.

b. Helping young staff members find graduate assistants and research personnel.

c. Acquainting staff members with sources of possible research support, fellowship grants, and support for leaves and foreign study.

(1) Discussing and suggesting revisions in requests for research grants.

(2) Providing opportunity to discuss research plans with members of the staff and to hear and criticize research in progress as well as membership in faculty research seminars and research groups.

(3) Help in research publication and in reporting at national meetings.

d. Encouraging young staff to question accepted answers, ways of looking at educational problems, and common methodologies. He is encouraged to deal with primary data as soon as possible, and to devise better ways to get more dependable answers for what the staff member perceives to be the persistent problems in education. The emphasis is on doing something about research, not talking about it.

e. Little or no questioning of the nature or level of the problem attacked or of the methodology used by a staff member. It is assumed that it is the privilege of the individual to decide for himself the importance of what he wishes to study and the adequacy of the methodology he uses to develop his answers. It is assumed that the imagination and insight of the staff member in seeing and developing a problem area is more important as a prior condition than always selecting the most powerful design and methods of analysis. We feel that this second factor of importance will follow and constantly improve when the educational problem is being clarified and that this is not so when the converse is the rule. When the problem is the focus, we can always bring technical resources and help to bear upon it. We have members on our own staff who have been sucking their statistical thumb all of their professional lives and have yet to find an educational problem worthy of their statistical steel.

4. The nature of the administrative and staff mechanism through which the research enterprise is implemented.

There always must be some decision as to ways to implement the research enterprise. Some universities have created the Research Bureau following the older model created so successfully at Ohio State by Charters and at Illinois by Monroe. Other universities have appointed a research coordinator or research director for the research program in education. In the Big Ten, all institutions except Wisconsin, Chicago, Michigan, Iowa, and Northwestern have such persons. Another common device is a research institute or center to focus facilities, staff, and budget on a problem area. This is especially true when such research involves interdisciplinary cooperation. More frequently, the committee structure is used as an informal way of administering research projects which involve more than one person.

At Wisconsin we have tried to avoid research bureaus, coordinators, and institutes because we believe that research is an important function of the University and a necessary obligation of all staff persons. All effort and money should be directed towards improving the facilities and resources for research and the upgrading of the whole staff. It is felt that if the staff is reasonably competent, there is no need for a research director or a research bureau to establish a group of special citizens. The general administrative details related to research should be a part of the Chairman's or the Dean's office, just as those details related to service and teaching functions should be a part of their concern.

5. The nature of the control and direction given to the research enterprise of the university.

At Wisconsin the responsibility of the faculty for the direction and development of the research function of the University is considerable. The Deans and Chairmen of the University have few research funds under their direct control. The Faculty Research Committee of the Graduate School is responsible for granting money given to the University by the Legislature and the Wisconsin Alumni Research Foundation. The Agriculture Research Station handles the federal research funds for Agriculture, and the Medical School has some research funds of its own. Foundation grants and outside project support are assigned directly to the individual or to the faculty group responsible for the research project.

Again, it is the belief of the speaker that the most effective long time development of research personnel takes place in a university where the major responsibility for the wise use of research funds rests in the hands of the faculty.

6. The nature of the relationship the department or school of education has to the rest of the university.

Departments of education in universities have moved in two directions in determining their relationship to the rest of the university. Many schools and departments of education have seen their responsibility as being relatively unique and thus have demanded the freedom and special resources of a college in order to

provide the necessary services to schools, to educate teachers, and to develop the graduate program in education which would meet the variety of vocational needs of people working in professional education. Teachers College at Columbia University is a good illustration of this kind of development.

The Department of Education at the University of Chicago serves to illustrate another model. Under Judd, it had its own endowment funds and a distinctive program of work. Yet in the late twenties, Judd assumed the leadership in having the Department of Education join the Division of Social Sciences in the reorganization of the University. He argued that distinctive work in education demanded cooperation with all the related disciplines whose scholarship had any bearing on the complex problems of changing human behavior and the improved understanding of the social institution we call the school.

It is the position of your speaker that as the research function in education becomes more important, a department or school of education must become an active and contributing member of the university community. Some of the steps to accomplish this goal are:

a. Place the procedures for selection and promotion of staff in the context of the university.

At Wisconsin, we try to have staff appointments in Education which exemplify the same level of intelligence, quality of education, and sense of purpose as do appointments in other areas of the University.

Promotions to tenure positions in Education are reviewed by the Executive Committee of the Division of Social Studies of the University on the same general basis as are the recommendations of those in Sociology, History, and Political Science.

b. Place the graduate program in education in the context of the graduate program of the university.

Education should be a member of the Division of Social Studies, or of the appropriate graduate division of the university with appropriate representation in the executive and research committees.

c. Join the rest of the university in extending and competing for university funds for research, in using overhead funds for improving research facilities, in obtaining appropriate research space, and in determining the research program of the university.

It is argued that if the department of education moves in this direction, then the following bases for long time development are more likely to be realized:

a. The identity and qualifications of members of the education staff are more likely to be known to the rest of the university and a more comprehensive commitment will be made by the university for their continued support and development.

b. Members of the education staff are more likely to be elected by the university faculty to key faculty committees of the university.

c. Members of the educational staff are more likely to serve on departmental committees of other disciplines as full fledged members and as consultants to educational programs.

e. Members of the educational staff are more likely to serve on the important research committees of the university which decide its research policy and administer its research funds.

f. Members of the educational staff are more likely to become members of interdisciplinary seminars, instructional programs, and research teams of the university.

g. Greater use is more likely to be made of other disciplines in graduate programs of education and less duplication of staff in philosophy, history, psychology, sociology, research methodology, and statistics takes place. Corresponding greater use of research facilities in education is made by the rest of the university.

It is recognized that the above developments have many price tags but if a department of education moves in this direction it is in a better position to communicate, influence, educate, and become a respected member of the university community. If it becomes separated and distinct from this community the gains in freedom and autonomy will be outweighed by the losses in resources, cooperation, and respect. The growing and changing research role of a university department of education demands this kind of university citizenship.

Certain Principles of Action

Decisions made in the six areas of choice discussed in the previous section of the paper determine the direction of the development of a department of education and lead to certain principles of action in the development of effective programs of staff development. These suggested principles are:

I. The Principle of Careful Staff Selection with Full Recognition of the Importance of the Research Function to be Served

It hardly seems necessary to make explicit so obvious a principle. Everyone tends to accept the proposition that if one wishes to develop a staff having some competence in research one needs to select individuals who have the ability, training, and value commitments to research. Yet it is commonplace to select staff in education on one basis and to judge it on another. It is merely argued here that there should be some congruence between the functions an individual is to perform and his training.

Rupert Evans in his study of Staff Attitudes Toward Research at Illinois found that some of the important variables in determining the amount and quality of research produced by a department of education have to do with the place where the faculty received graduate instruction and the effectiveness of previous research in the faculty member's specialty. This and other studies have shown:

1. Staff members who have received little training in research will have less favorable attitudes toward research than those who have been educated in institutions where considerable stress is placed on this type of training.
2. Staff members who received their graduate training in research under the direction of certain individuals responsible for active research programs of their own tend to have a different kind of research know-how and value orientation than do individuals trained under different individuals in the same institution.
3. If a faculty member specializes in a field in which little research has been done, or where research done has had little effect, he is apt to reject all research in favor of some sort of revealved knowledge.
4. Staff committees or groups responsible for the selection of new staff tend to "like their own kind." Thus, high quality staff with a research bias tend to select competent people with a research bias. Less competent staff groups tend to select less competent people with their own bias.
5. A staff composed primarily of "older staff members" has a less favorable attitude towards research and tends to be more "hostile" towards younger staff members interested in research than do departments where there is a wide variance in age of faculty members.
6. The traditional criteria for selection such as high intelligence and high undergraduate record alone do not provide a desirably accurate or comprehensive base. Curiosity and enjoyment of intellectual exploration, independence in thought, and persistence in carrying on projects to completion seem to be equally important as predictors of research interest and development.

A program of identification and selection of a staff should have some of the following characteristics:

a. The early identification of possible staff members in their own graduate careers and the careful following of their progress.

At Wisconsin we have followed some individuals for five years prior to their receiving their Ph.D. and their appointment to our staff. We have tried to be in close communication with "key" people in selected institutions whom we recognize as providing a superior type of training for their graduate students.

b. The willingness to "invite" promising people to our staff a year before finishing their graduate training. We are willing to wait one to two years for the right appointment.

c. The collection of our own records of information on prospective candidates. We have little confidence in prepared credentials. A highly promising, original student frequently has some instructor "down on him." Or, his advisor regards him as "the best student I have had in ten years." We check with individuals in whom we have confidence, visit the student's campus, invite him to our own campus, read any of his published materials, and the like.

d. Making sure a prospective candidate is interviewed by staff members representing different areas of education and frequently by staff in other related disciplines.

e. A willingness to reach an effective resolution between "finding the man" and the fitting of his program to his interests and abilities, and "defining the job" and then fitting the person to this description. We tend to err in the direction of finding the best quality individual with a research bias while recognizing that programs have to be developed and activities implemented.

f. An interest in (1) the candidate's intellectual curiosity and doubt, positive constructive orientation to problems and people, sense of mission and contribution, capacity to organize and get things done; as well as (2) a broad general education with strong related fields of scholarship; (3) experience in schools and educational enterprises; (4) experience in both laboratory and field research programs; (5) training in use of research tools; and (6) a thesis related to his area of professional concern and representing a worthy problem done in an adequate way.

II. The Principle of Early Induction into Research

It does not seem very sensible to spend a great deal of effort and time identifying and selecting a staff member with a strong research training and interest and then force him to wait for five to ten years before encouraging him to start his research activities. If research is an important function, then new staff members should be inducted into research activities immediately. The following procedures seem useful in achieving this goal:

1. The job definition for new staff carries the expectation of scholarly work.

Great leeway is given to the individual to determine for himself the nature and character of his scholarly contribution. No priority is placed on the relative value of library study and creative synthesis, laboratory and field studies, basic and applied research, descriptive and status studies, and the like. We would like the individual to be as free as possible to follow his own leads and to choose or invent his own appropriate methodologies. Paul Torrance in his discussion of Development of Creativity in Educational Researchers says "I wonder if our real task is not one of helping our colleagues to understand the need for and requirements of creative educational research. Discoveries and breakthroughs of any kind usually require complete breaks with apparently very solidly established opinions, with the most commonly pre-conceived ideas, and with theories considered as evident by common sense."

2. Faculty load definitions provide time allocations for research as well as for teaching and service.

It hardly seems wise to figure faculty load only in terms of the number of classes to be taught. Any adequate consideration of load should reflect properly in time the educational functions to be served. Young staff members are not impressed with exhortations to do research when no effort is made to provide adequately for time in which to do it well.

Other areas of our University commonly give new staff members three year appointments on one-half time research or full time research support for consecutive summers. There is no reason why Education should not use this same kind of appointment. It should be mentioned, however, that with this practice in these areas goes the expectation that out of three assistant professors with this kind of appointment, only one will be given a tenure position. A special effort should be made to give a new staff member adequate time for research and study the first year of his appointment.

In our Department, the work load for an individual is determined jointly by the individual concerned and the chairman of his department. The individual staff member assumes the initiative in the process in consultation with other members of his group.

3. The activities of the individual and department should be tied to its award structure.

Evans reports that the actual priority of the department in one university was (a) research with earmarked funds for salary of the investigator; (b) campus teaching; (c) extramural teaching; (d) committee work; (e) research with no salary for the investigator; (f) writing; and (g) service. The award priorities, however, were (a) research leading to publication; (b) research not leading to publication; (c) hortatory and armchair publications; (d) service to professional organizations; (e) teaching; (f) service to public schools; and (g) service to lay groups.

These two lists do not agree with each other, the principal difference being the relative standing of teaching and non-research publications. The activities having high actual priority are those which are generally scheduled far in advance. Those which have high priority of reward are those which are easily measured.

4. Fluid risk capital should be available without complicated administrative procedures to supply hourly help, equipment, materials, and assistance to new staff members with research interests.

Krathwohl reports the success of a committee on the Michigan State University campus that grants money for research with few questions asked. After evaluation of the work of this committee, the conclusion was reached that one of its major virtues was that the grants were made by a group of deans "who didn't pretend to know a thing about research." "Unsupportable" projects were supported and some of them proved valuable.

III. The Principle of Easy Access to Facilities for Research

Quality individuals and time for research must be combined with adequate facilities before full realization of the research potential of a staff can be achieved. At Wisconsin we have made the following attempts to provide individual staff members with easy access to necessary research facilities.

1. The research funds of the University are administered by a faculty research committee of the Graduate School. Any professor of the University may apply directly to this committee for research funds. A brief one page application form is used and each individual staff member making a request for research funds is interviewed by a member of the University committee. Sums up to $10,000 a year may be obtained by active research workers from this committee.

2. Help is given by active research workers of the Department to its young members in the development of research applications to the U.S. Office of Education, N.S.F., N.I.M.H., and various Foundations. A file of research applications is kept in the Dean's office, and an officer of the central administration assists in processing research requests.

3. The University computing services are available without charge to any University member who does not have outside research funds. A training program is maintained for all interested graduate students and staff by the Numerical Analysis Laboratory. Consultative help is available for programming research data for the various computers. We have a 1604, 705, 650, and a number of Bendix installations. This equipment is available on a 24 hour, seven day a week basis. A faculty committee determines the policy for all computing services of the University.

4. Space for research is limited but every effort is made to provide space through rent of private houses, rooms in the Stadium, use of prefabs, remodeling of space in University buildings, and extensive building of research facilities through support by the Wisconsin Alumni Research Foundation and federal funds. There is a University Space Committee; the Dean of the School of Education presents our space needs to the Administration and to this committee.

5. A variety of University facilities have been developed to implement research:

   a. Extensive space is provided in Memorial Library for faculty carrells with library service to the research collections of the University. Micro-film and micro-card facilities are available.

   b. Machine and equipment shops are available for the remodeling and building of specialized research equipment. The Engineering School staffs and supports a design and development shop for research equipment.

   c. The photographic laboratory has research equipment available for time lapse, high speed, and specialized photography.

   d. The University is developing a Sampling and Demography Center related to various studies of the State. Research programs desiring to identify "representative populations" in the State can use the services of this Center.

   e. The Department of Education with the help of the U.S. Office of Education is developing an Institute of Research Design for educational research. Individual staff members have the use of the services of the staff in planning their own research projects.

   f. The University has organized all the statistical services of the University into a Department of Statistics under the Chairmanship of Professor George Box. The specific function of this Department is to develop appropriate statistical procedures to deal with the research problems of the various divisions of the University. Its orientation is to research, not to the Mathematics Department.

   g. Funds are available for domestic and foreign travel to obtain necessary research data or to visit and study in active research centers in the various parts of the world.

   h. The office of the Vice-President of the University publishes a complete list of available fellowships, scholarships, and professorships and their supporting agencies on a monthly basis. This is sent to every staff member of the University.

   i. Any staff member of the University can get the help and services of any active research worker in the University merely by picking up his telephone and arranging for an appropriate time.

IV. The Principle of Staff Development at the Grass Roots Level

It is impossible to have each staff member of a university department of education active and competent in research. A program of staff development in research, however, should see the total staff as the broad base from which such a program operates. The idea is to see the research function as an important part of each major staff person's responsibility. The development program of the department is to help that staff member to become increasingly competent to make his research contribution to his field of interest and work. It is assumed that this broad base of individuals will give greater assurance, not less, that over a long period of time more important research problems will be identified, more research talent will be utilized, and greater research skill will be gained. It is recognized also that this assumption may be questioned. It is possible to argue that greater concentration of support and encouragement to a few individuals will produce better educational research more rapidly than will the above plan. This may be true over a short period of time. Most of us feel, however, that this is not a good procedure for insuring long time development.

The above point of view tends to question many common practices designed to stimulate research development. Some of these are:

1. The concept of released time for research.

Since research is an important function of the university along with teaching and service, time is not "released" from one function like teaching to be used on other functions. Time should be "assigned" to whatever function or combination of functions appropriate to the competencies of the individual and the needs of the program.

2. The concept of a "research coordinator."

Logically, if there should be research coordinators, there should also be teaching coordinators and service coordinators to appropriately recognize the need for stimulation and improvement of each of the three major functions of a university.

A second implication inherent in the idea of a research coordinator is the notion that the research coordinator is a person who is so competent in research that he can "teach" the rest of the staff how to do educational research. The point of view of this paper is that no individual can possibly be this competent. In fact, this procedure would soon reduce the level of research in a department to one view and one level of contribution. Competent research people do not react with enthusiasm to research coordinators. They want to learn from many people, not one person. Effort spent to secure high quality staff and to provide them with research support and facilities will pay greater research dividends in the long run than appointing a research coordinator.

If this research coordinator is an especially competent research person, this appointment is a perfect way to reduce his own research production to a minimum.

The administrative excuse for research coordinators can hardly be supported. The office of the chairman and dean should administer the research function as they do the teaching and service functions of the university.

3. The concept of a "Bureau of Educational Research."

The idea of a research bureau staffed with highly competent research people is merely an administrative device to house a collection of research specialists frequently separated from the basic educational program of the university and removed from the spark and interchange of its intellectual life. A concept of the whole staff as a base to encourage research development is not sympathetic with the idea of a bureau. Any financial resources available for the creation of a bureau might be also used for broad staff development and the creation of an adequate range of facilities for research production. An effective research organization should organize people around a problem, not a problem around an administrative mechanism.

4. The procedure of paying staff extra for research activities.

Some universities have used funds obtained from outside research grants to supplement the salaries of the staff responsible for them. This creates a special class citizen in the university community whose income is partially dependent on obtaining outside research support for his projects. The premium this procedure places on developing "supportable" projects, the consequent narrowing of the base research interest and activity, and the widening of the gap in communication and concern between staff groups produces a condition which tends to obstruct broad staff development in research skill, the development of creativity and imagination in problem identification and development, and the creation of a fundamental university commitment to the research function.

The problem of adequate faculty salary schedules and the proper recognition of the research function in the university structure is not going to be solved by a program of specialized payments to faculty. In fact, a procedure such as this would prevent, not facilitate, any basic solution.

5. The procedure of developing "name" research professorships.

The concept of broad grass roots development of the research competencies of the staff questions the wisdom of developing "name" professorships whose stipends will provide selected individuals with half to full time research support for the duration of their professional career. Perhaps a better use for this money would be to give individuals at critical productive periods in their career five years of research support as a natural part of their programs of development at the university. This money used flexibly as a regular part of the program of staff and research development eliminates some of the difficulties with name professorships and opens up the opportunity for such research support to more people.

It is recognized that it is necessary many times to develop a visible symbol for securing endowments for professorships and to establish the general principle of support for the research function. It is merely hoped that this specialized support program for name professorships builds back into the basic staff development program of the university.

V. The Principle of Long Time Commitment to an Area of Study

There is little value in selecting high quality personnel, inducting them early into the research process, and making research facilities available to them if there is little hope or confidence in the possibility for continuous and long time work in a given problem area.

Everyone knows that you do not start and stop research programs on a semester basis. Anyone who believes he can do his research only during the summer or during his sabbaticals is not going to do any research. It takes a great deal of time to get to one's data, to learn how to measure and control the variables, to arrange the logistics of space, equipment, subjects, research assistants, stenographic help, and the like. Economy in research operation comes when a research program can keep rolling sufficiently long to fully exploit an area of research.

At Wisconsin an active research worker can expect continuous support from the University Research Committee in amounts from three to ten thousand dollars a year. This level of support, while small, keeps things moving and provides a base for securing outside grants.

Increasingly, there is a greater willingness among granting agencies to support individuals and programs of research rather than specific projects. This is a step in the right direction providing all research support is not used for this purpose. We need uncommitted funds for problem exploration and the risk capital support for individuals in the beginning period of their research career.

VI. The Principle of the Commitment of the Central Administration of the University to Research

A great deal has been made of the importance of the value commitment of the individual professor, a department of education, and the university to the research function. We have come to expect vigorous active support of research development from chairmen and deans. Too often we forget that a critical level of research commitment lies in the central administration of the university. It is not unusual to find universities where the central administration is unwilling to endorse new research ventures, to find additional money to retain young promising people, to make it possible for quality people to be brought to the university, to become concerned about the overall development of the research enterprise of the university, or to become active in rescuing departments which have become futile and incompetent.

In my own University we have a central administration which is characterized by the following:

1. It is receptive to receiving proposals both from within and without the University for research ventures which are different and which do not fit neatly into the administrative structure of the University.

2. It is willing to make decisions and to actively support them.

3. It is willing to assume leadership in presenting the research needs of the University to the people of the State, and to private, State and federal granting agencies.

4. It is active in bringing together people and departments around areas of common research concern.

5. It is active in securing and keeping topflight research personnel in all areas of the University.

6. It supports the use of overhead funds to develop better research equipment and facilities.

7. It actively supports the principle of faculty participation in the development of research and teaching programs of the University.

8. It makes it easy for faculty members to discuss problems of concern with any member of the central administration.

This active support of the central administration has a great deal to do with maintaining and extending the image of the University as an important research institution. Perhaps it is not coincidence that the President, Vice-President, and Dean of the Graduate School are all respected and admired members of the University research faculty.

VII. The Principle of Effective Administrative Mechanisms for Research Implementation

The historical tradition of educational research is that it is best done by a single investigator. The basic unit of organization, therefore, is that individual. He works on a problem area different from other research individuals. He is surrounded with facilities, time, and graduate students. He competes with other individuals for space, money, and recognition. He communicates directly with the administrative officers of the university and with the faculty research committees which frequently combine important policy, judicial, and administrative powers over the research program of the university. He gains his feelings of adequacy from the regard of his peers. Yet he is highly skeptical of committee, team, and group research.

The experience of the last thirty years in research, however, has provided many illustrations of the value of surrounding a research problem with individuals having the competencies necessary to deal with it adequately; the value of programming a research area so that a team may research a number of related problems at the same time; and the value of a group of individuals brain storming about research problems, methods of attack, the analysis and interpretation of a body of research data, and about the necessary strategy and programming. It is becoming clear that the old concept of a single investigator as the sole mechanism for implementing research programs is too limited a concept to deal adequately with the problems of the present day research development.

In examining the different forms of organization we have used to implement research programs,we have become very conscious of the importance of the nature of the organizing base in determining the ability of a research organization to be productive. It is possible to identify the following bases which have been used for organizing research enterprises:

1. A problem area represented by a human or social function such as urbanization, communication, cultural mobility, social structuring, and human development.

   This type of problem area has served as a basis for bringing together individuals from different disciplines because of their common interest in these phenomena and because the data can be efficiently collected and used by these same individuals. A research group having these functions as a center of research interest can move in geography and level of interest very easily.

2. A problem area represented by a geography--Asia, India, Africa, Wisconsin, cities over 100,000, etc.

   Here a geographical, social, or political region is surrounded with individuals interested in studying it. Because many of the same phenomena are being studied from different points of view, many relationships and interactions can be identified and studied while at the same time the research group can profit from the economy of data collection and analysis.

3. A problem area represented by a physical object, a research medium, a research methodology, or by a tool.

   Examples of this basis for research organization are the use of a team composed of a heart surgeon, a physiologist, and a mechanical engineer to develop a mechanical heart to substitute for a real one during heart surgery; the development of a pen to measure grip pressure while writing by an electronics engineer, educational psychologist, and a skilled mechanic; a group to develop appropriate research programs for our new 1604 Computer; and a group of research workers using our Primate Laboratory as a research center.

4. A problem area represented by a particular classification or division of a field of study.

An illustration here is our own Committee on Research in the Basic Skills. Others may use curriculum, administration, guidance, audio-visual aids, or school finance as the basis for focusing the research interest of a group of people.

5. An administrative vehicle itself may be used as the initial basis for organization. This administrative device can be attached to any number of different research problems and can be used to house and support the people who work on these problems.

A research bureau, a bureau of field services, and the like are examples of such administrative structures.

An examination of these organization bases show that the usual departmental organization of a university is incapable of dealing with them adequately. Thus, formal and informal research committees, bureaus, centers, and institutes have been created to give some visible form and structure to necessary research operations which cut across usual department and division lines and, as a consequence, have great difficulty in knowing to whom they should report, secure staff and funds, and how to become a functioning unit in the university enterprise.

This speaker obviously cannot solve this problem! He merely wishes to point out the vital importance of such administrative mechanisms in the development of research personnel and in determining the nature of research programs. It seems clear that sole dependence on the single investigator as an organizational unit is rapidly becoming inadequate. What the nature of the mechanism or mechanisms for implementing research in the future should be is unclear and creates considerable anxiety and frustration in all concerned. Perhaps the group sponsoring this seminar might research this problem of how the present research development ought to be organized and administered.

Summary

This paper has looked at the problem of how the university can exert its leadership in the development of research personnel in education. Our answer has been that the university can exert its leadership best by attracting high quality individuals with research training and values to join its faculty; to provide these individuals with the climate, facilities and support which will enable them to make topflight contributions; to develop superior graduate training programs; and to attract high quality graduate students. It is argued that these goals are best accomplished when this task is a common responsibility of the basic staff in a department or a school of education.

Six decisions of a department of education were identified as being important in determining the character of the development of a university program for educating research personnel in education. These decisions have to do with:

1. **The place and priority of the research function in the work of each staff member.**
2. **The nature of the participation of all staff members in both undergraduate and graduate teaching.**
3. **The nature of the program and responsibilities to be assumed by the young and more mature members of the department.**
4. **The nature of the administrative mechanism through which the research enterprise is implemented.**
5. **The nature of the control and direction given the research enterprise of the university by the faculty and administration.**
6. **The nature of the relationship the department or the school of education has to the rest of the university.**

The way in which a department of education makes the above decisions determines the character and quality of its leadership in developing research personnel in education. In the development of such programs the following generalizations seem important:

1. **The principle of careful staff selection with full recognition of the importance of the research function to be served.**
2. **The principle of early induction into research.**
3. **The principle of easy access to facilities for research.**
4. **The principle of staff development at the grass roots level.**
5. **The principle of long time commitment to an area of study and research.**
6. **The principle of the commitment of the central administration of the university to research.**
7. **The principle of the importance of effective administrative mechanisms for research implementation.**

The above decisions and related principles of action provide the context within which universities and departments of education create their leadership roles in developing quality research personnel in education. A university, because of its very nature, cannot escape its leadership obligation in this area.

TRAINING RESEARCH PROFESSORS OF EDUCATIONAL ADMINISTRATION

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We have had a little trouble with the title of this paper. At one time it read, "Training Researchers to Study School Administration." That title sounded as though I were to tell how we might capture a band of researchers and convince them, through fair means or foul, that they should lay aside their various and sundry academic interests and take up the study of school administration. This information might be exactly what we need but I have no such strategy to share.

While I shall focus on the training of the research professor of educational administration, I hasten to add that I for one welcome the social scientists who, of their own volition, have decided that educational administration is a fruitful field for their research endeavors and I hope we shall have more such investigators. However, my task is not to speculate about how social scientists should be trained, but rather to suggest some aspects of a program that might provide us with more professors of educational administration who have research competence.

Even though this process of preparing research-minded professors goes on right before my eyes, I am not quite certain how it happens. To be explicit, some of our graduate students at the beginning of their programs affirm that they wish to prepare themselves for the school superintendency or some other major administrative post in American education. A year later, in the minds of these students the desire to become a superintendent is competing with the possibility of becoming a professor. Before the end of the second year the professorship has won even when it means turning down a superintendency paying $14,000 a year and accepting an assistant professorship paying $8,000 a year. When queried about this choice these students invariably reply that they have found a new challenge in ideas and they want a chance to pursue those ideas in further study and in teaching.

My purpose today is to look beyond present practice and to extend, if possible our insights regarding ways by which we can select the appropriate people and train them to become research professors of educational administration. Perhaps, when our profession becomes a little more mature we can drop the word research for it will be assumed that all professors do some research. I shall first set forth a concept of the professorship, then deal with the selection and training of prospective professors, and finally suggest a rationale for such a program.

A Concept of the Professorship

Following Guetzkow[1], to some extent, we might look upon the professor of educational administration as the "developer," the link between the practitioner and the pure scientist. The developer has at least four important functions: (1) to maintain an orientation with respect to the general field of education, the field of administration, and the social science disciplines; (2) to establish two-way communication between those who seek to discover knowledge and those who attempt to apply knowledge to the attainment of ends; (3) to determine the relevance of social science concepts and findings, and plan the adaptation of these concepts and findings to school situations; and(4) to select and train practitioners.

The role of the professor of educational administration is a complex one. It is so complex that it is doubtful if any one individual can perform adequately all the functions ascribed to the developer. Thus we are inclined to envision in each major university a team of developers. In a team of four or five professors there may be a continuum of professorial talents, ranging from the analytical skills of the social scientist at one extreme to the artistic talents of the practitioner at the other. While all members of this team would probably have some relationship to a range of functions, one professor might give some emphasis to field service, another some emphasis to training programs, another some emphasis to the synthesis of research findings, and still another some emphasis to actual research projects. Our concern today, I take it, is how we can get more developers who tend to be on the research end of this continuum.

Before proceeding with that task a few other ideas need mention. Administration, like medicine and engineering, is a social role and like other professions is dependent upon many disciplines. Thus, for instance, medicine must look to bacteriology and chemistry; engineering to mathematics and physics; and administration to sociology, psychology, and other disciplines. Research tends to go forward in the basic disciplines and research concepts and findings tend to be synthesized and utilized in the profession. Thus, research done in bio-chemistry may supply concepts and findings useful to the practice of medicine. Research done in sociology may supply concepts useful to the practice of administration.

But we should note that this transmission from the basic disciplines to the field of application is not an automatic one. As Guetzkow[2] suggested, the basic variables must be reidentified and measured in concrete settings, the relevant model involving these variables must be selected and composed from among alternative theories, and the magnitudes of the important constants in the selected system must be determined. This adaptation or conversion will ordinarily not be done by the social scientist; it must be done by the administrative scientist, the research professor of educational administration.

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[1] Harold Guetzkow, "Conversion Barriers in Using the Social Sciences." Administrative Science Quarterly. 4 (June, 1959) 68-81.

[2] Ibid. p. 70.

The administrative scientist can do research in some aspect of administration and not on the whole of administration. This probably means that for research purposes educational administration must be divided into parts. One such division might be: the environment in which administration takes place; the organization through which administration functions; and the individual who functions within the organization. Clearly, anthropology and sociology have much to say about the environment; social psychology and physiology have much to say about the individual. But even these categories are too broad to be researchable. Instead, researchable areas may be as specific as power structure, job satisfaction, and career motivation. While a professor of educational administration may attempt to encompass much of the field in order to see the place and import of his research, the research itself is probably narrow and restricted.

The concepts we have suggested--the professor as developer, a continuum of several professors whose skills are complementary, the adaptive role of the administrative scientist, and the need for specialization in administration for research purposes - may help us determine an appropriate plan for the selection and training of professors who do some research.

Select the Potential Researchers

It seems clear that selection of the right talent is fully as important as is training in the production of research professors. While criteria for selection need further examination, I suggest that in seeking potential researchers we should look for men who are bright, who are young, who have strong liberal arts backgrounds, who have exhibited some independence and creativity and who have a commitment to education. We might explore each criterion a moment.

The capacity to deal meaningfully with abstractions, as the research professor must, makes it apparent that high intellectual ability is a necessity in the man we are trying to produce. Ordinarily, we might look for those people who have done well academically at the undergraduate level in such courses as English, mathematics, science, and social science. While tests have their limitations, prospective researchers will undoubtedly score in the upper quarter of the norms established for college students on mental ability tests and we can be even more confident if they score in the upper ten per cent.

Practical considerations suggest that these people be found while they are still young, preferable in their twenties. In the first place, a long training program, acquiring the Ph.D. degree and even post doctoral work, is in store for such men and they need to get on with this before family obligations are too heavy. Moreover, if career patterns are too well established, the practice of administration for instance, there may be reluctance to caste aside much of what it has taken years to achieve. Finally, early training gets people into the world of scholarship at an age when many men, seemingly, are most creative.

A strong liberal arts background would appear to be the best insurance we have that the men we seek will have dealt with important ideas. We might hope that this background includes significant experience with the humanities, the sciences, and the social sciences. If the major field of study were in one of the social sciences that might be even better for our purposes, but significant experience with the major ideas of Western Culture seems to be more important than high specialization in one field of study.

While we are seeking candidates who are bright, young, and liberally educated, we do not want them to be conformists. I hope we find in the background of each candidate a little rebellion, a curiosity that has been pursued, a capacity to separate ideas from the men who espouse them, a sense of inner direction, and even a little emotional instability.

Now a word about commitment to education. We are, in a sense, creating a new profession, or giving a new dimension to an emerging profession. We have sociologists and psychologists who get sanctions from their disciplines. We have educational administrators who get sanctions from their boards of education and fellow practitioners. We are attempting to create a social scientist-student of administration. In most universities he will work in a school of education and thus his prestige, salary, and promotion will be dependent, in large measure on his colleagues in education. Unless he shares with these colleagues a commitment to education he may find these sanctions difficult to attain.

Creating a new professional role is difficult at best; it may be impossible to create the role we envision unless there be some commitment to education. Without such a commitment we may find ourselves accepting second rate social scientists not valued in their own disciplines. In a recent search at our own institution for candidates for NDEA fellowships in educational administration four very able people with commitment to education were found. In each case these young people were currently serving as [illegible] or in minor administrative posts at schools or colleges. The search was open to liberal arts graduates without this experience but in not one case was an able prospect identified who had not already made some commitment to education. This experience may be suggestive.

Place in A Research Environment

Assuming that we have selected graduate students by the use of some such criteria as noted above, we might now turn more directly to the program of training designed to prepare research professors. First, and perhaps most important, I suggest that we place such men in a highly developed research environment. To begin with, this requires a university that gives major attention to graduate and professional training. Only in such an institution will research be seen as an even more significant goal than either teaching or service. Only in such an institution will a graduate school of education, or some similar organization, be able to concentrate on the study of education in place of the very heavy demands of training many teachers. I am not disparaging teacher education programs; I am simply suggesting that in institutions where chief emphasis is given to teacher education ordinarily relatively little emphasis is given to basic research.

However, I would also like to say a word about the interrelatedness of research, training, and dissemination. While graduate schools of education, and similar organizations, may place the research purpose first, they can not ignore the training and dissemination purposes. Many of the concepts being dealt with in research will also be relevant to the prospective practitioner. Indeed, if they have no relevance for the practitioner, they probably do not reflect the real world of administration. All researchers and researchers-to-be need appropriate exposures to the real world and some of this exposure can come from practitioners in training and practitioners in service, a point to be amplified later.

Within this research oriented university and school of education there must be a department, unit, or center concerned with educational administration. The moving spirit of this unit should be one of study and inquiry. While our present purpose is to suggest the necessity of such an environment for the professor-to-be, I would maintain that the future practitioner also needs much the same environment, even though he will use concepts and research findings somewhat differently than will the future professor. A unit given to inquiry has significance in many ways. It means that professors are not heavily loaded with classes to teach nor with field service assignments. It means that each professor is pursuing some inquiry of his own. It means that students are in full-time residence over long periods of time. It means that the discourse about administration goes on among students, among professors and between students and professors. It means that ideas come to be cherished more than status. It means there is less concern with how and great concern with why.

But the study of administration can not go on in isolation. Thus, this department or center promotes communication with representatives of the basic disciplines whether they be in the school of education or in the university at large. Many of these relationships, perhaps the most significant ones are informal in nature. At the coffee hour a student approaches a psychologist or sociologist and tries out an idea. This may lead later to an extended conference. This conference may suggest that other people in other departments of the university be consulted. The student soon learns that any professor anywhere is available if there is an idea to be discussed. By some such process the resources of a great university become the domain of the prospective professor of educational administration.

Just as there is easy communication with the academicians there must also be easy communication with those who practice administration. Thus, the department or center has appropriate relationships with principals, superintendents, boards of education, state departments of education, and with associations of school boards and school administrators. These relationships may come by means of selected field studies and consultations, by means of clinics and conferences for administrators, by means of informal conferences held with administrators who come to the campus seeking help. In all of these relationships professors and professors-to-be join as colleagues. Both have insights which may prove useful to the practitioner. Both need to learn continually more about the practitioner and the world in which he lives.

Perhaps a word should be said about inappropriate relationships between the department or center for educational administration and the field. Engaging professors or professors-to-be in many, repetitive school surveys seems to be poor use of time and talent. We may also suggest that when professors spend most of their time in field consultation, whether motivated by low salaries or personal disposition, that the research and teaching functions of their institutions suffer. It probably means that professors are just not available to discuss important ideas with professors-to-be.

Clearly, if professors-to-be are to make the most of this research oriented environment, there must be considerable flexibility in their programs. This means that course requirements are minimized, the individual search for ideas is maximized; that part time study is minimized and full time study is maximized; that there is relatively less value placed on merely learning what others have thought and relatively more valued placed on extending or modifying, in significant ways, what others have thought. And all of this is done not by specific direction or formal program but by way of pervading atmosphere.

Provide Some Structure to the Program

Since no institution seems to be able to give a Ph.D. degree without establishing certain formal requirements, I will suggest some structure for a program designed to prepare the research professor in educational administration. There may be other structures fully as appropriate as this one but here is something with which to begin. It seems necessary that the program be no less than two and preferably three years of full time resident study.

A three-year program of study might have two major and two supporting components: (1) Specialization in one of the social sciences: sociology, psychology, political science, or economics; supported by some work in each of the other social sciences. (2) Specialization in educational administration; supported by some work in the general field of education. Considerable flexibility should be allowed to take into account the prior academic work of students and also their current interests. The preliminary or qualifying examination, however, should require competence in each of the two major areas suggested.

An important aspect of the program might be a continuing seminar on the problems of administration. For first-year students, one of the major purposes of the seminar should be orientation to the field of education and to the field of administration. A special effort should be made to relate all the social sciences to the student's career goal. For second-year students, the seminar should provide the setting for an exchange of ideas representing the various disciplines as related to administration. Student papers and research projects should be reported and discussed. For third-year students, the seminar should provide the stimulation and critical environment for the initiation and development of dissertation proposals. Throughout, the seminar should be viewed as a device for providing cohesiveness to the group; as a setting for the exchange of ideas; as a procedure for relating education, administration and the social sciences; and as a stimulus to research and writing.

It should be emphasized that the student in this program is pursuing intensively one social science and extensively the other social sciences quite differently than would the "pure" social science student. In this program the question of the relevance of social science concepts, methods, and research findings to educational organization, operation, and control are constantly raised. This appears to be one way of getting synthesis, adaptation, and extension of social sciences to a particular field of study. Moreover, some such approach appears necessary if the possible contributions of many concepts from many disciplines are to be adequately explored.

In addition to acquiring competence in one social science and in administration, it is clear that the student must become familiar with research design and methodology. Again, much of this should be done in the context of critiquing research, and actually participating in research, but there will still be the need for formal courses in such areas as the philosophy of science, research design, and research methodology. In some cases students will need to strengthen their mathematics background before they can handle the statistical concepts involved in much research. It should be clear, however, that documentary and historical research is as acceptable and as useful as is statistical research.

Finally, I suggest that the program for the professor-to-be should include a rigorous dissertation requirement. Instead of this being looked upon as merely a learning exercise it should be seen as the culmination and the most significant part of a three year program designed to prepare a scholar. Scholarly standards should prevail and a scholarly contribution should be expected. Clearly, the dissertation committee should be composed of professors from educational administration and from the social science discipline pursued by the candidate. It can be expected that the dissertation will not only yield some new knowledge but that it will mark the beginning of a line of inquiry to be continued beyond the period of formal training.

There is a Rationale

Hopefully, a rationale for what I have said to this point has begun to emerge. Perhaps I am justified, however, in trying to make that rationale a little more explicit. First, I have suggested that we are dealing with highly selected, creative people. These people respond best in a climate that is challenging and permits independence. They need opportunity to give range to their ideas regardless of how unorthodox they may be.

Actually, as suggested by the classic study of Cattell and Drevdahl, eminent researchers have quite different personality structures than do eminent college teachers and administrators. One of their conclusions regarding researchers follows:

> But it is easy to see that the schizothymic preoccupation with things and ideas, rather than people; the self-sufficiency which favours creativity and independence of mind; the dominance which gives satisfaction in mastery of nature for its own sake; and the emotional instability which permits radical restructuring and creativity, would all be vital to the best kind of basic research performance—though perhaps unpleasant in an administrator and inept in a business man.[3]

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[3] R. B. Cattell and J. E. Drevdahl, "Personality Profile of Eminent Researchers," The British Journal of Psychology, 46 (November 1955) 248-61.

Getzels and Jackson[4] have some findings on creative youngsters that may have relevance at this point. In terms of what leads to success in life the perceptions of creative youth and high I.Q. youth, all relatively bright, were identical , an r of .99. In terms of teacher expectations the perceptions of the two groups were again identical, an r of .98. Clearly, the creative youngsters and high I.Q. youngsters read the world and the teacher equally well. In terms of self ideal, however, the relationship between the two groups was an r of .41. This difference became even more dramatic when teacher expectations and self ideal were correlated for each of the two groups. For high I.Q. youth the r was .67, while for creative youth the r was -.25. Clearly, high I.Q. youth tended to be conformers, while creative youth tended to have minds of their own.

These studies suggest that we seek in our professors-to-be people who have the personal characteristics of researchers including creativity and independence of mind.

Second, learning is conceived as a change of behavior resulting from experience. This experience is characterized by many presentations of a situation and by repeated efforts of an individual to react to it effectively. In the words of Anderson and Gates,

> Learning may be considered in its broadest sense as a process of adaptation. Through the process of learning, men acquire new ways of behaving or performing in order that they can make better adjustment to the demands of life. ...The essential stimulation of a living, motivated organism; incentives which when attained will lead to satisfaction of the motives; motivation is assumed to be an inner state of need and is a necessary condition if the learner is to engage in learning activity. Needs, wants, interest, and sets are terms which are used to refer to motivating conditions. Satisfaction of a motive may be blocked by the learner's inability to attain the incentive which could satisfy the need.[5]

This concept of learning makes clear the need to literally surround the professor-to-be with a research atmosphere and to reinforce formally the expectation that he develop high competence in conceptual thinking and skills in the methods of inquiry. The student discovers the discipline of scholarship; the rigorous demands imposed upon those who develop a proposition, who would test such a proposal, and who would infer generalizations from the research findings.

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[4] As yet unpublished data secured in conference with J.W. Getzels and P.W. Jackson in March, 1961.

[5] G. Lester Anderson and Arthur I. Gates, "The General Nature of Learning," Learning and Instruction, 49th Yearbook NSSE, Chicago: University of Chicago Press, 1950, p. 16.

Third, and possibly the most important aspect of this rationale, the student identifies with and accepts the value patterns of the researchers with whom he works. This means that among the professors in educational administration, or in the basic disciplines the student finds one or more people who serve him as a model. Such identification, more than any other one thing, helps the student accept the values, the rewards, the satisfactions of those who deal with ideas and who take delight in testing them in the real world.

This identification or socialization process has been examined with some care by Gottlieb.[6] He studied 2,482 graduate students in the arts and science division of 140 major private and public universities of the United States in terms of the development of the professional self of the academic scholar and the part played in that development by the graduate faculty with whom the student comes in contact, and the acquisition of professional values by the academic graduate student. Two of his very interesting conclusions follow:

> Our general hypothesis was that career preferences are modified by contact with graduate school. It is supported by the data we have presented. We were able to show a tendency to change in the direction of research on the part of changers in departments where only research was emphasized. The influence of the faculty was even more marked when it could be shown that the student had received a direct personal communication from one or more faculty members which could be construed as encouragement in the direction of research. The fact that the overall tendency among the changers is to shift in the direction of research, and that the most prevalent prestige value among faculty members is interest in research tends to support the basic hypothesis. We conclude that students are changed in the graduate school. Substantively, we conclude that the general trend of that change is in the direction of research.[6]

> From the responses of the research changers to [illegible] imaginary dilemmas, we conclude that the researchers have internalized more than a career interest; they have internalized a way of life. To make the decision to embark on a research career carried with it many other implications about the type of life the professional initiate is going to lead. It means giving up a great deal of time that could be spent with the family, or in out-of-the-field reading, or in hobbies, or civic affairs, or any of a wide range of activities that make up the normal course of life for a professional man. Our research changers were asked to endorse alternatives in imaginary situations which would show whether they accepted the concomitants of a research career. In each case, they tended to choose alternatives consistent with a career in research. We conclude that the change that takes place in the graduate school is more than a superficial decision to change the focus of one's work.[7]

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[6] David Gottlieb, "Processes of Socialization in the American Graduate School." Unpublished Ph.D. dissertation, Dept. of Sociology, University of Chicago, 1960, p. 172.

[7] *Ibid.* p. 172-173.

Obviously, the process of identification or socialization will not help achieve our end, the training of research professors, unless there are high level research people about with whom to identify. But excellent researchers in the basic disciplines alone will probably not do the trick. There is also the need for research oriented professors in the school of education and in the division of educational administration. These professors should have some knowledge of the basic ideas in the related disciplines and should be able to help a student turn what he is learning in the direction of examining with greater insight schools and school functionaries.

In Summary

Now what have we said? First, we noted that a new concept of the professorship in educational administration is needed. We saw the professor as a middleman between the pure researcher in the social sciences and the practitioner who uses knowledge to achieve ends. Actually, we envisioned a team of professors at least some of whom are able to adapt and extend social science concepts to the study of administrative behavior. We are attempting to train more people who can perform this role.

Second, we have suggested that training programs designed to prepare research professors are exercises in futility unless the right talent is selected in the first place. Suggested criteria to be utilized in seeking people with such talent were mental ability, youth, liberal arts backgrounds, evidence of independence and creativity, and some commitment to education.

Third, we posited a training institution characterized by a rich research environment. We would go so far as to say that at all levels of the university practices such as appointments, promotions, salaries, and professorial loads reveal, even more than pious affirmations, that research is the major goal of the institution, its graduate school of education, and its division of educational administration. Moreover, we made much of the point that it is in such an environment, even more than in formal requirements, that the training we seek is achieved.

Fourth, we did suggest, however, some formal aspects of one such training program. Residence study of two or three years in length seemed necessary. Extensive work in one social science and in educational administration were offered as the two foci of the program. Planned exposure of the professor-to-be to the academic disciplines and the field where administration goes on were thought essential. We also stressed the place of a rigorous research expectation for the dissertation.

Fifth, we offered at least elements of a rationale for these proposals. We noted the personal characteristics of independent and creative people. We saw that learning takes place when responses are inadequate to meet a situation; when there is a need, drive, or motive, and an appropriate goal the attainment of which will satisfy the motive. Finally, we suggested that the major process involved in the training program we envision is one of socialization whereby the professor-to-be finds one or more people with whom he identifies and a total environment from which he internalizes a way of life.

A RATIONALE FOR TRAINING RESEARCH WORKERS

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In our time, science has gained tremendous prestige--but for the wrong reason. What we in America seem to have responded to most avidly have been the technological, and even the gimmicky, aspects of "science." Our zeal has been accompanied by only a remote understanding of the essential ideas that undergird all critical and creative inquiry. In the same way that we in America have bureaucratized corporate, governmental, and university life, we have also sought to bureaucratize research. The increasing federal and foundation aid to social science and educational research that has stimulated the research scene since World War II has been accompanied by several attendant evils, not the least of which is the virulent, contagious disease that now ravages many of our campuses: projectitis. To have a research proposal approved by most fund-granting agencies the investigator must stress design and must indicate what data will be gathered. Data are treated as so many units of production, almost as if they were automobiles on a General Motors' production line. We have come to revere technique; I fear that, at times, substance has been sacrificed to method. Our predicament is similar to that described by Lord Dunsany:

> There is a great tendency nowadays to place technique above inspiration, and, if the notion spreads, we shall have the diamond cutters valuing their tools more highly than the diamonds, with the result that , as long as they cut them in accordance with the rules of the craft, they will cease to care whether they cut diamonds or glass, and then will cease to know.

Far too many of us who aspire to be scientists miss the point that the [illegible]ation of creative inquiry lies in observation, in identifying what is "out there." We grant that such observation never can be random and always is more fertile when it has been guided by an explicitly stated theoretical formulation. But we must start with observation; all our techniques--including the clinical and statistical--are just that: techniques. Yet no technique, no matter how elaborate, can grind important generalizations out of raw data that are, themselves not viable. We sometimes are in such a hurry to count things that we fail to take enough time to decide whether or not what we do count is, indeed, worth counting. This defect arises out of a misguided effort in education and the behavioral sciences to mimic the more prestigious physical and biological sciences. But the prestige of these older sciences has been earned not so much by the use of quantitative methods as through insightful, patient observation. As Feibleman has noted: "A scientist is not one who can see better but one who can watch more intensely."[1]

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[1] James K. Feibleman, "The Psychology of the Scientist," Synthese , XII, No. 1 (March, 1960), 96.

However rich any set of observations may be, they are useless to science and to mankind unless the investigator can communicate his findings to others. Thus, J. Z. Young, professor of anatomy at the University of London, states, "Science consists in exact description of one's observations to other people."[2]

In other than a face-to-face situation there are only three languages by which one can communicate a description of events or experience to other people: by words, by numbers, or by pictures.[3] Irrespective of which of these three channels the scientist uses, he must recognize that his language becomes an integral part of his behavior as a scientist, that his language is not merely an appendage to his "scientific" activity. Without endorsing to the hilt the Whorfian hypothesis, we must, nonetheless, accept Whorf's major conclusion: that the language in which each of us is acculturated cuts up our perception of events and experiences in specific and limiting ways.[4] Indeed, the greatest benefit any one of us can derive from command of one or more foreign languages is the inescapable realization that language itself structures our experience, that our concept of "reality" is restricted in part by the very words that imprison us.

Since the structure of our language can distort our reporting of experience, and even can interfere with our apprehension of experience, I believe that the first unit in a course in research methods in education--or for that matter, in any of the social sciences--should be devoted to the topic "Language and Events." In an introductory course on research methods that I offer at the University of Utah I start the students with readings from Wendell Johnson's *People in Quandaries*[5], and Young's *Doubt and Certainty in Science.* I encourage the most competent students to acquaint themselves, too, with Cassirer's penetrating essay on "Science,"[6] and also to go directly to Korzybski.[7] I repeat Korzybski's theme, "Words are to events as maps are to territories."

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[2] J. Z. Young, *Doubt and Certainty in Science*, (Oxford: Clarendon Press, 1951), p.108

[3] In face-to-face situations we must also deal with a wide range of "muted language." Cf. Andrew W. Halpin "Muted Language," *School Review*, LXVIII, No. 1 (Spring, 1960), 85-104.

[4] Benjamin Lee Whorf, Language, *Thought and Reality* (Cambridge, Mass.: The Institute of Technology Press, 1956).

[5] Wendell Johnson, *People in Quandaries* (New York: Harper & Brothers, 1946).

[6] Ernst Cassirer, "Science," in *Essay on Man* (Garden City, N.Y.: Doubleday Anchor Books, 1953), pp. 261-278.

[7] Alfred Korzybski, *Science and Sanity*, (3rd ed.; Lakeville: The International Non-Aristotelian Library Publishing Co., 1948.)

Let it be noted, too, that in this course we also make the students aware that words are man-made; because a word exists we have no guarantee that there exists "out there" a "thing" that corresponds to the word.

Some of the logical positivists—even, for that matter, Percy Bridgman himself—have, to some extent, recanted. Bridgman, for example, is no longer as unreservedly enthusiastic about the value of operational definitions[8] as he was when he first discussed such definitions in *The Logic of Modern Physics.*[9] Yet, at the present stage of our knowledge in educational research, I would rather see students err in the direction of insisting upon operational definitions than have them submit to the enticement of the vague, exhortatory slogans which characterize so much pap that masquerades as "research" in education.

Scientific advancement consists in finding ways of conceptualizing anew our experience. This means that one endeavor of science must be to define our experience in new terms—new language, unfettered by previous concepts and stereotypes. Man can make words; he also can unmake them. Or to state the point differently, man can eliminate from his vocabulary those words and concepts that create greater confusion than they are worth.

Having started the research methods course with a discussion of general semantics and having illustrated the advantages of using operational definitions, we next explicate the role of theory in research. We emphasize that theory must deal with "is's" not "ought's," and note why the models that we use can never be declared as either valid or invalid. The question of validity is irrelevant; the only relevant test is an heuristic one. Models are "as if" statements that we use to generate "if...then" statements which we can, then, test empirically.

Just before the curtain falls on Act I of the course, I deliver what usually turns out to be the *coup de grace.* I suggest that language itself can be construed best as a theoretical model: an "as if" statement about experience and events. Furthermore, this "as if" statement must be subjected to continual revision.

The map can never be the same as the territory; the map is an abstraction designed for a specific purpose. Thus the language-map of the poet is not the same as the language-map of the scientist. This, of course, does not mean that one map is better than the other, only that each map is different from the other. To ask whether a map is "true" is silly; the relevant question is whether a given map is useful for a specific purpose at a specific time and at a given stage in our knowledge. This point of view comes as a distinct shock to many students who, for a long time, have enjoyed the spurious security that faith in "The Word" seems to have afforded them. To illustrate how words can get between us and our experience, let me quote from Harold Taylor's recent, great book, Art and the Intellect:

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[8] Percy Bridgman, *The Way Things Are* (Cambridge, Mass: Harvard University Press, 1959.)

[9] Percy Bridgman, *The Logic of Modern Physics* (New York: Macmillan, 1927), pp. 3-9.

> The trouble is that most kinds of education are devoted to teaching students how not to be themselves, but instead how to cover up, how to gain enough knowledge, for example, in a survey course in Western civilization so that no one will ever know that you haven't read any of the authors or that you haven't ever really understood the works of art you were asked to observe. The usual kind of education--that is, the kind that is divided into courses, condensed into textbooks, put out in three lectures a week, tested by examinations, and rewarded by three academic credits a throw--is designed to give answers to questions which nobody asked and to inhibit the student in discovering his own truth and insight. The lectures and the texts do all that sort of thing for you. They provide a way in which the student can cover up his true self by finding a vocabulary acceptable to most people and a set of facts which are generally known among people generally considered to be generally educated.
>
> Once this skill of covering up has been acquired, the student may never be called upon to say what he really thinks or feels at any point in his education or later life. This is what makes bores, and produces college graduates who are ignorant and dull, but successful and plausible.[10]

What I have been saying is simple: that no man or woman can presume to do research unless he first becomes knowledgeable about the relation between language and events. Yet this is the very point where most textbooks and courses in educational research have failed: The authors start the student with techniques and "cook-book" recipes, and assume-erroneously, I believe--that the student already understands the pitfalls of language and the essential nature of theory in science. Furthermore, the premature introduction of the student to technique tends to cripple his skill in observation. We already have too many scientists who choose their research topics not in terms of the importance of the domain but because techniques for measurement in the particular domain they choose happen to be available.

Such a situation recalls the story of the policeman who one evening discovered a drunk fumbling his way around a lamp-post, evidently searching for something. The policeman asked the drunk, "Lose something?"

"Yep, my wallet."

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[10] Harold Taylor, Art and the Intellect (New York: The Museum of Modern Art, 1960. Distributed by Doubleday and Company, Inc., Garden City, N.Y.), pp. 20-21.

"O.K. I'll help you find it."

After several minutes of diligent but unsuccessful searching around the lamp-post, the policeman asked, "Say, where did you lose it?"

"Oh, up the street."

"Then why in hell are we looking for it here?"

The drunk assumed a weaving posture of dignity and, with haughty condescension replied: "More light!"

The issue for us is not one of "more light," but rather of "More light on what?" Technique qua technique is not enough; we persistently must ask whether whatever technique we use is, indeed, applicable to the research task in hand.

I do not want to disparage the value of technique; I ask only that we keep it in perspective. I would like to see to it that the student is not introduced to technique prematurely and that he be made to understand that observation does come first. I would like to see the student discover how to observe events and experience and learn how to report these events free from verbal stereotypes.

Alfred North Whitehead has stated the issue succinctly:

> My point is that a block in the assimilation of ideas inevitably arises when a discipline of precision is imposed before a stage of romance has run its course in the growing mind. There is no comprehension apart from romance.[11]

To help our students freshen their observations, we had better rid ourselves of some illusions. Let us quit thinking of research as research with a capital "R." Let us instead seek to encourage creative and critical inquiry without being concerned obsessively with a form of empiricism that is ridden with what Whitehead has called the error of "misplaced concreteness."[12] Let me offer two examples of perspicacious observation. The first example is that of a distinguished historian, the second that of one of the great novelists of our time.

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[11] Alfred North Whitehead, The Aims of Education (New York: The New American Library: Mentor Books, 1949), p. 44.

[12] Alfred North Whitehead, Science and the Modern World (New York: The New American Library: Mentor Books, 1949), p. 52.

Raymond Aron, professeur in the Faculty of Letters at the University of Paris has recently published an exquisite study on "The Situation of Democracy," in which he compares the history of Western political institutions in the Twentieth Century.[13] He reports not a blessed standard deviation or Pearsonian correlation, not even a mean! Yet here I find a rich mine of concepts that can be extrapolated from nations to formal organizations. Why, Aron asks, do some nations provide a stable base for the development of a "democracy," whereas others do not? Why, for example, do we discover in the Latin American nations a history which shifts between populist "democracies" and military dictatorships? Aron gives us a host of provocative cues for new concepts in the study of administration, for new ways of conceptualizing the dimensions of organizations.

He reports, in particular, new dimensions by which we can more accurately describe a "democracy." With the guide of Aron's reasoning, it requires no wild leap of the imagination to see why many organizations--school systems, and even universities--reveal a history of organizational policy characterized by wide and repetitive swings from one extreme to another similar to those found in Latin American countries. Aron's skill, in short, is his skill in observing, in not being blinded by the filter of words which obfuscates the vision of so many of us.

The second example of clearsighted observation is that of the Irish novelist, Lawrence Durrell, whose brilliance is vividly displayed in his tetralogy, The Alexandria Quartet[14]. His topic is love in our times--or, if you will, love in any time.

In the first book of the tetralogy, Justine, Durrell tells the story of the infatuation of Darley, a young teacher, with Justine, the wife of a wealthy and politically influential Egyptian. At the end of the first volume, Darley gives his manuscript, i.e., Justine, to one of the characters in the story, Balthazar.

In the second volume, Balthazar, Durrell has Balthazar return the manuscript to Darley, with corrections. In effect Balthazar says, "You are all wrong. It wasn't that way at all. Justine was not in love with you. You were only a 'cover' for her affair with somebody else." So the second volume deals with the same material as the first, but with the events seen through the eyes of a different character.

In volume three, Mountolive, Durrell relates the life of Mountolive, a British diplomat. Darley, Justine, and the major characters of volumes one and two do not enter the story until about half way through the book. The same events are then viewed through a third pair of eyes. The first three volumes end at about the same point in time; only in the fourth and final volume, Clea, does the story move forward in time. Yet even at the conclusion of the tetralogy the reader is not certain which version of events is "true"--in a sense they all are.

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[13] Raymond Aron, "The Situation of Democracy," Daedalus, Spring 1961, 90, pp. 350-370.

[14] Lawrence Durrell, Alexandria Quartet: Justine (1957); Balthazar (1958); Mountolive (1959); and Clea (1960) (New York: E. P. Dutton Company).

I urge students to read Durrell if only to shatter loose many of their verbal and perceptual stereotypes, to let them watch Durrell demonstrate the complete "as if" quality of every man's perception of his own experience.

And now I hear a few colleagues scream, "But what about objectivity?" To them I reply, "Please: let us quit deceiving ourselves." No scientist is nearly as objective as he pretends to be or would like to believe that he is. Note, for example, recent studies by Rosenthal[15] and his colleagues at the University of North Dakota.[16] These investigators have shown, even in simple laboratory experiments, how experimenters are able to obtain from their human of their animal subjects precisely the data the experimenter wants, needs, or expects to get. Indeed, I respect objectivity, but I resent the blind, compulsive pursuit of it, especially if, in this pursuit, we deceive ourselves. It is past time for us to ask why some of our colleagues persist in doing meticulous, "objective" research on arid topics.

Consider the instance of a professor who enjoys a national reputation in the field of educational research--a man who does excellent research on learning. Yet, when one of his ablest graduate students proposed to him a Master's thesis in which she sought to study certain attributes of a national sample of elementary-school principals, he courageously said, "If you find what you think you will, do you really think it is a good idea for you to do a thesis that may reflect against the teaching profession?" The student demurred and naively declared that she thought science was dedicated to a disinterested search for truth. He smiled, and replied: "You do plan to take your Ph.D. in this department, don't you?"

Although the student did complete the M.A. thesis, under a different professor as chairman, this same student now plans to go to another university to complete work on her Ph.D.--in a less restrictive academic milieu.

I propose that we bring fresh observation to the entire issue of objectivity. Yes, I endorse objectivity; but I deplore the fraud of insisting upon objectivity in dealing with trivia while we slyly smuggle into the system arrant subjectivity in respect to the central issue of what topics we do study. The subjectivity that enters into our choice of what topics we study is the most dangerous form of subjectivity, for it involves not a picayune question of inter-rater reliability, but a question of far greater import: the morality of the investigator. Does he have the guts to study what is worth studying or does he prefer to play with his little toys within the safety of his playpen? This aspect of subjectivity--the morality of the investigator--is one that should worry us all.

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[15] Currently visiting professor of psychology at The Ohio State University.

[16] Robert Rosenthal, Kermit L. Fode, C. Jack Friedman and Linda L. Vikan, "Subjects' Perception of Their Experimenter Under Conditions of Experimenter Bias," Perceptual and Motor Skills (1960), 11, pp. 325-331.

But when we move to the question of subjectivity in respect to technique, the scene changes. I grant that dependable (i.e., reliable) measures are desirable, yet I refuse to get exercised about the introduction of subjective elements in research. I fear that much of the effort made to reduce subjectivity is futile. On this score, I believe that more of us need to follow the sweep of the exciting argument presented by Michael Polyani, originally a physical chemist and now a social scientist and philosopher. In his monumental book, *Personal Knowledge*,[17] Polyani rejects completely the ideal of scientific detachment. He declares that knowing as an act of comprehension involves a change in the person carrying out the comprehension. Accordingly, comprehension must remain non-critical in that there exists no permanently fixed framework within which a critical testing of that comprehension can take place.

In science as well as in other areas of living there are times when we must have the courage to take a gambler's risk. At certain junctures I would be willing to risk slightly less objectivity, were I to see a chance to gain richer human insight and freer observation. Of course I would not have us resort solely to feelings, and certainly not at the expense of intellectual rigor. A scientist cannot afford to adopt the stand of Iphigenia in Goeth's play: "Ich untersuch nicht, ich fuhle nur." [18]

No, I would not have us become Iphigenias. But I will wager that it is a touch of Iphigenia--a controlled touch, perhaps, yet a touch of Iphigenia--that gives Ross Mooney his creative insight into the nature of research. Anyone who has been privileged to read the opening chapter of the book Ross Mooney is now writing[19] will sense immediately that here is a warm, sensitive human being, attuned to man's aesthetic impulse. Nor do I consider it accidental that a research scholar as distinguished as Jack Getzels should have done his early graduate work in comparative literature and should possess a discriminating taste in art. Yet I suppose I should remember, too, that Iphigenia was sacrificed to Artemis, the goddess of wildlife and hunting, and that even today the Iphigenias are placed at the mercy of hunters: faculty committees.

Conversely, I look at the work of other research investigators--men who are industrious and exacting but whose inquiries are mundane and whose findings are passionless. Let me return to the learning-experiment professor I referred to earlier. One day he drew himself up to his full height of high dudgeon and declare to me: "I never read a travel." Men who take such pride in their cultural illiteracy have turned the art of science into a business. I pity them.

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[17] Michael Polyani, *Personal Knowledge* (Chicago: University of Chicago press, 1958).

[18] Johann W. von Goethe, *Iphigenie auf Tauris*, ed. by Philip Schuyler Allen (New York: Ginn and Company, 1906), Act Iv, Sc. 1, 1650.

[19] This book, as yet untitled, will deal with the nature of creative inquiry.

Over and over again I find that the scientists whose work I admire most are men who are at home not alone in the sciences, but in the arts and the humanities as well. Why? Because the essential human quality that enables a man to engage in creative inquiry is sensibility. Accordingly I quote the conclusion of Harold Taylor:

> It is for this reason that the arts, since they have most directly to do with the development of sensibility, are an essential component of all learning, including scientific learning.[20]

The temper of the scientist must become more and more akin to that of the artist, not to that of the businessman and the production engineer. No longer can we, as civilized human beings, afford what C. P. Snow, the physicist and novelist, has referred to as the tragedy of *The Two Cultures.*[21]

How long, I wonder, will it take us to learn that the model of the physical and biological sciences may be the wrong one for us in education to ape? The events with which educators must deal are human events and therefore have closest affinity to the spheres of the philosopher, the poet and the novelist. Too many orthodox psychologists are rigid; they are quick to treat with disdain any "knowledge" other than that which is empirical. But consider the relevance of the insightful analysis of the logic and language of teaching that recently has been reported by Bob Gowin at the University of Chicago.[22] Look, too, at the recent book, *Language and Concepts of Education,* edited by Smith and Ennis, and especially at the chapter by Smith entitled, "A Concept of Teaching."[23] In these instances we discover compelling evidence of the unique contribution that logical and philosophical inquiry can make to educational research.

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[20] Harold Taylor, *Art and the Intellect,* p. 12.

[21] Charles Percy Snow, *The Two Cultures* (London: Cambridge University Press, 1959).

[22] Bob D. Gowin, "Teaching--Its Logic and Its Language," *Elementary School Journal,* Vol. 61, No. 4 (1961), pp. 179-190.

[23] Othanel B. Smith and Robert H. Ennis, eds., *Language and Concepts of Education* (Chicago: Rand McNally and Company, 1961).

Yet we cannot rely upon the final stability of logical analysis any more than we can trust a naked empiricism. The mathematician Godel, in his startling theorem,[25] has demonstrated wholly unsuspected and staggering imperfections in any system of deductive logic. He has shown that it is theoretically impossible to prove the consistency of any set of postulates which is, so to speak, rich enough in content to be interesting. The question, "Is there an inner flaw in this system?" is simply unanswerable.

Let me reiterate now in a slightly contrapuntal way, the themes that I have been seeking to develop. In short, let me suggest four specific, yet broad ways by which we can improve the quality of educational research.

First, we must enlarge the pool from which we draw trainees; I would secure young men and women who have a broad, liberal arts training and who, therefore, are likely to be more sensitive to the nuances of the human condition. Part of our difficulty is that the present system is rigged so that we discourage from research careers in education some of our ablest undergraduates. There is nothing to be gained by belaboring the point that most of us already know: that many of our brightest undergraduates get discouraged by the banality of courses in education; they flee from our ranks. To attract to our profession bright young men and women who will make creative contributions to educational research, we must improve our undergraduate program. Not the least task in this respect is to rid our colleges of education of their surplus of "old maid" professors--of both sexes.

The second job is to improve the morality of those professors responsible for the training of research workers. Young people seek to emulate men whom they can respect. But I fear that the image of morality created by many professors is not one we would like our students to copy. For example, the amusement with which a professor refers to graduate students as a supply of cheap "slave labor" does not change the intrinsic, exploitative attitude that prompts him to make such a remark. On my first research job, the senior investigator blandly told me, "I'm exploiting you, Halpin. Of course. I know it. But that's all right; later on you'll get your chance. You'll have some graduate students of your own and you'll get your chance to exploit them." This attitude sets up a shabby example of morality. We had better realize that a professor's responsibility is to liberate the creative capacity of the young research people who work with him. And we had better police our ranks to eliminate those men who use their positions not to liberate the young, but to exploit them.

Third, we need to examine the institutional arrangements within which research is conducted. Research in our universities has become Big Business. The universities are eager to have professors secure "outside" money. Nor is it without significance that when a contract has been negotiated the university's comptroller immediately deducts from the allotment the university's own "cut" for the project. In the case of "cooperative" contracts where the institution is supposed to make a matching contribution, it certainly is no secret that much of the "matching" money is, in effect, only "money on paper," and that the amount does not represent actual funds set aside in a separate account for this purpose. The investigator and the contracting agency are forced to engage in a conspiracy of silence about these shenanigans. Here again we encounter a procedure of dubious morality. How do we overcome it? I suggest that in some way the universities, themselves, need to be coerced into assuming greater responsibility for providing research funds on their own. Perhaps one criterion of whether funds should be granted to a university by an outside agency would be an index of the amount of research funds that the university provides, entirely on its own, for its own research personnel. For example, personnel on research projects, particularly those people who do not hold faculty rank, frequently are viewed by the university as peripheral, if not indeed, expendable employees. What happens, for example, when a gap in time occurs between two research projects? Does the university, itself, pick up the tab to pay the personnel so that competent people can be kept on the campus until a new contract is negotiated? I expect we all know what usually happens.

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[25] Ernest Nagel and James R. Newman, Godel's Proof (New York: New York University Press, 1958).

The young people who work within institutional arrangements such as we now have, quickly learn that research is a "dog eat dog" affair. Because the university itself is loath to assume full social responsibility to these young people as human beings, they, in turn, tend to become cynical and at times, I regret, even predatory. I doubt that this is a healthy atmosphere for developing creative scientists.

Fourth and last, we need to examine the sponsorship for educational research. The Cooperative Research Program of the U.S. Office of Education has been a boon to all of us. We all owe a dept of gratitude to Roy Hall for what he has done for this program, and we must respect Dave Clark's continuing accomplishments. Yet, I am disturbed that we in educational research are forced to rely--for the most part--upon a single major source of research support. The "portfolio" is not diversified enough.

Furthermore, we should examine another central danger in the entire project-proposal game. Hans Selye, perhaps the most eminent endocrinologist alive today, remarked at a recent conference, "The research studies that you can put into proposal form for a government contract are probably the ones that are not worth doing in the first place." All right; perhaps Selye exaggerates. Nonetheless, there is a vital point in his riposte: that too much of our research endeavor encourages *activity* at the cost of creativity. It seems that we are afraid to support a man simply to give him a chance to think. I would like to see a few government agencies and foundations show enough courage to place their bets on men and to place these bets without hamstringing the man by any form of contractual commitment. An outstanding exception to the indictment I have made is the Center for Advanced Study in the Behavioral Sciences; Ralph Tyler understands the importance of placing his bets on men. Another research agency that shows a sophisticated respect for the "care and feeding of researchers" is the Office of Naval Research.

The man with a business outlook usually is aghast at the suggestion of giving anyone such a blank, signed check. His first rejoinder is, "How can we be sure that the man will work? If we pay him this way, maybe he'll simply take a vacation or retire." To this I can respond best with a comment made by Andrew Wyeth, one of our most gifted, contemporary American artists: "If I can't paint, I die." Creative research investigators are, indeed, "driven"; they can no more refrain from doing research than can a nightingale refuse to sing.

You say that my suggestion is impractical? I would guess that the price of a single B-70 placed instead into an endowment fund, could pay the salaries of a solid core of capable research workers for the rest of their lives. But here again the decision of how we, as Americans, spend our resources is a moral one. Do we want to spend the bulk of our resources with the tacit assumption that war is inevitable?[25] Or are we willing to devote a moiety of these funds to a few human beings who—thank God—embrace a more hopeful view for mankind.

I know that my remarks will be disturbing to many people; they usually are. I know I will be accused of placing too much emphasis upon "feeling" as opposed to "intellect." Accordingly, I may just as well conclude with a quotation from E. E. Cummings in which he describes, in language that I envy, one of the perspectives that has run like a leitmotif through my remarks:

> (While you and i have lips and voices which
> are for kissing and to sing with
> who cares if some oneeyed son of a bitch
> invents an instrument to measure Spring with?[26]

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[25] One of the few men who has challenged this assumption is Henry A. Murray, distinguished professor of psychology at Harvard. Cf. Henry A. Murray, "Unprecedented Evolution," *Daedalus*, (Summer 1961), pp. 547-569.

[26] E. E. Cummings, "25 & Poem 157", *Collected Poems* (New York: Harcourt Brace and Company, 1938).

TRAINING FOR RESEARCH IN EDUCATIONAL ADMINISTRATION

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The training of persons to do research in educational administration will vary according to one's view of what it means "to do research in educational administration," and according to one's view of effective ways of conducting that training. This provides two parts for this paper, the first explicating "research in educational administration," and the second considering the training of those who are to do research in this field.

I. Research in Educational Administration

What one takes "research in educational administration" to be will vary according to what one takes "research" to be, and what one takes "educational administration" to be. My conception of these two constructions may be summarized as follows: To be meaningfully joined, "research" and "educational administration" need a common origin in an elemental function. This function may be traced back to, and located in, the way man's mind is required to operate by virtue of man's make-up as a creature of nature. Nature is a creative phenomenon; so is life; so is man; so is man's mind; so also must be man's use of his mind and his institutions. "Research" is a ceremony created by man to help him use his mind as a creative instrument; "educational administration" is a role provided in an educational institution to help man operate the institution as a creative instrument. The two constructions have the same elemental function, i.e. creation. From this they derive both integration and discipline.

In presenting this line of thought, I begin with nature in largest frame and proceed by quick sketching through evolution of life, man, man's mind and institutions, to show "research in educational administration" as a given creative system in a successive series of creative systems.

We take the universe (nature) to operate as an open system. Within the universe are energy forms in transaction with one another. As transactions occur, creations occur and energy changes form. This is a constant process in the universe as each moment of creation succeeds the next.

Life forms (biological organisms) are a class of these energy forms. They are in constant transaction with their environment, giving and receiving energy. Within a given organism, energy is composed in many forms. Maintaining life in the organism depends on maintaining a synchronous order (steady state) in the transactions going on among these internal forms. Life depends as well on maintaining a synchronous order in the transactional exchanges between the organism and its environment. Selectivity on the part of the organism is required in order that the transformations occurring between inside and out fit to the need of the organism at specific times and places, according to its specific nature. The operation of the organism is one continuous creation of fresh formings inside the organism and out, operating as integral of the organism, taken as an open system in continuous and selective transaction with its environment.

More formally expressed, the elementary conditions for the existence (life) of an organism are that it operate as a system (1) open to its environment, (2) integral of its being, (3) in transactional give and take with its environment, (4) selectively making fresh fittings (adaptations, creations).

In processes of birth, as life is passed from one generation to the next, these conditions are accentuated: (1) the mature generation needs to be open to its external environment in order to gain what is needed internally to provide a supporting and open environment for the conception and emergence of the new life form; (2) the mature generation needs to be integral of energy in order to supply the energy utilized by the new life form in integration of itself as a growing system; (3) the mature generation needs to operate transactionally with its external environment in order that internally, the new life may be able, in its own transactional give and take, to get what it needs for growth; (4) the mature generation needs to be fittingly fulfilled in the creation of the new in order that the new may be fittingly fulfilled in its own creation. Birth is a reciprocating system wherein one creation occurs within another, each serving the other creatively. This is the way of life.

As birth follows birth and the environment of the organism changes over long spans of time, adaptation occurs in the functional structure of the organism in order to maintain suitable fittings with the environment. Higher orders of life evolve (evolution occurs) in cases where organisms, following the conditions for life and birth, are able to increase their potency with respect to these conditions, i.e., higher orders of life occur when a species is able to develop (1) an increasing openness to wider reaches of the environment (thereby increasing the range of resources for meeting needs), (2) an increasing differentiation and integration of internal structure in the organism (to handle the greater choices involved in the wider reaches), (3) an increasing span of sequential controls (to hold to courses of action adequate to reach the further goals), and (4) an increasing selectivity for fit (to properly place each bit in its increasingly more complex relationships with all the rest of the system). All four of these directions of formation operate as within one mutually operating system, a development in one direction (encouraged by specific environmental conditions) in turn challenging the development of others.

As higher orders of life evolve, perception evolves. Perception is the process of reading the significance of the environment from the point of view of, and in reference to the need of, the organism. Increasing capacity in perception allows for (1) increasing reach into the environment for a wider reading, (2) increasing internal organization of significances, (3) increasing sequential transactions guided by significances, and (4) increasing complexity in the fittings which are created by the organism's action.

Evolving perception, in turn, evolves learning. Learning is the process of recording and ordering (within the organism) the consequences (significances) of perceptual transactions so that experience of the organism, in its environment, may have cumulative value for guiding further action of the organism for favorable fittings in that environment. It is the formation of conceptual (symbolic, semantic) structures to give differentiation and integration to the meanings which occur in sequential perceptual experiences. The more the learning, (1) the more meanings included, (2) the more their differentiation and integration, (3) the greater their use in controlling further sequential transactions, and (4) the more fulfilled and inclusive the semantic creations (knowings).

Evolving learning, in turn, evolves problem-solving, i.e., the capacity for deliberate guidance of action by forethought. This is the capacity to act as if an act were carried out with the environment prior to actually carrying it out, using past experience to predict what is likely to happen under various conditions. In this way, choices of action can be deliberately made to enhance the possibility of suitable fittings when the act is actually carried out. The greater the capacity for problem-solving, (1) the greater the range of complexities which can be processed to the advantage of the organism, (2) the greater the semantic organization of the organism, (3) the greater the power of the organism to hold a course of sustained action by conscious guidance, and (4) the greater the range of experience included in evaluations of acts taken.

Evolving problem-solving, in turn, evolves consciousness of the process of problem-solving. Consciousness of the process of problem-solving grants the power to the problem-solving creature not only to use the process in specific instances but to use the process generally as a way of shaping transactions with the environment. The problem-solving process then becomes something recognized by the creature as characteristic of him and as something which he can affect according as he uses it . He can solve different problems according to what he pays mind to; he can succeed or fail according to what he pays mind to. He is knowingly confronted with the opportunity and responsibility of operating a "mind."

Here, in evolution, enters man as a creature capable of generalized problem-solving, conscious of his having a "mind," and in position to take responsibility for its use. With such a process, man can be (1) open to more, (2) integral of more, (3) transacting with more, and (4) creative of more than any other of nature's creatures.

To gain these advantages, however, man is required to use his consciousness in ways which fulfill his elemental nature as an open, integral, transactional and creative system so that what he does consciously is in harmony with what the universe otherwise invites and allows.

Man can fail to do this. There is nothing in the make-up of the generalized problem-solving instrument which guarantees its proper use. What it provides is power derived from its self-reflexive capacity, i.e., from its capacity not only to feel but to have feelings about feelings, not only to think but to have thoughts about thinking, not only to formulate acts but to formulate acts upon actions, not only to feel, think, and formulate acts but to feel about thoughts, think about feelings, formulate acts on feeling, etc., in interoperative complexity. Thereby the mind is able to generate its own higher orders of relationships by which to structure frames of reference which can include divergent elements of a problem in a unified system, thus to provide a solution. Able technically to operate as if on the inside of its own cocoon, the mind can become internally enmeshed in its own reactions to its own reactions, without effective outreach. It can multiply the power of its mistaken ideas as readily as it can multiply the power of its sound ideas. It can generate worry and sickness and death as readily as it can generate insight and health and more abundant life.

Nature, in evolving a creature capable of generalized problem-solving, therefore, evolved a creature capable of destroying the very process which created it. Freedom to choose what is to be put into the generalized problem solver at specific times and places is freedom also to choose that which can destroy the mind, can kill, can stop creation, can deny life itself.

In receiving his self-reflexive mind, man, therefore, received, as well, the necessity to know himself, his mind, the significance of his acts, and the kind of world in which he is acting. He may then be able to feed into his problem-solver those kinds of transactions, which, when run with the world, will harmonize with continuing life and extending creation rather than run counter to it.

Man is required to cultivate his minding, to look after it, to do productive and creative things with it, to take responsibility for it. In short, man is required by his nature to be a teacher of himself in ways which can maintain and enhance his life.

Looking at societies, one can see that man has consciously undertaken to take responsibility for disciplining himself as a creative system. He has established ceremonies for teaching himself a proper and productive stance toward life. Looking at the earth and sky, and contemplating his origin and destiny, he has developed "religion." Looking at the products of his own hand, seeking from them his greatest satisfaction, he has developed "arts and crafts." Looking into the need for knowing in order to guide himself and his young in ways most rewarding, he has developed "education." More recently, within the latter, he has developed "science" as a way more particular, more accurate, more sustained, for naming the operations of nature on which he can most surely depend in guidance of himself.

Looking into each of these ceremonies for their basic aims, one can see that each is structured to intrinsically honor in man what man needs to honor in himself to be a creative, life-giving, creature.

> Religious ceremonies are aimed (1) at a wider belonging in the universe, (2) at a more vivified and integral being, (3) at a more assured and longer-range becoming, and (4) at more of the beauty and glory of life-fulfilled in its most refined realizations.

> Art ceremonies are aimed (1) at opening man to his own creative production, (2) at integrating creation within each production, (3) at cultivating an increasing discipline for extending creative capacity, (4) at enlarging and deepening esthetic realizations.

Educational ceremonies are aimed (1) at opening the learner's mind to an increasing range of meanings, (2) at forming these learnings into a more effective integration, (3) at increasing the range of the learner's control, and (4) at producing ever more inclusive and refined judgments and comprehensions.

Science ceremonies are aimed (1) at systematically extending the boundaries of knowledge, (2) at integrating new knowledge in a system internally consistent with present knowledge, (3) at extending the range of intellectual and operational control of events, and (4) at comprehending, every more inclusively, the fittings between man and nature.

Each of these ceremonies, and all together, bear witness to man's conscious effort to teach himself as an open, integral, transactional and creative system, seeking (1) an increasing outward reach, (2) an increasing central integration, (3) an increasing span of sequential control, and (4) an increasing fulfillment of fit within fresh creations.

These conditions for the cultivation of the mind are the same as those for the evolution of the species, the birth of a generation, the existence of an organism, the operation of the universe. All creation has the same basic discipline, the same basic source, the same basic fulfillment to serve.

This is the context in which "research" and "educational administration" get their elemental rootage. "Research" evolves in the context of science; "educational administration" evolves in the context of education; both evolve from the same naturalistic necessity and both operate toward the end of evolving creation.

"Research" is a way of creating science. It is to the scientist what painting is to the painter, what composing is to the musician, what writing is to the novelist. It is a way of evoking new relationships, new realizations, new conceptual formulations. It is a ceremony by which the scientist submits himself to being taught by what happens when he treats the world as if it would operate as he hypothesizes. The teaching comes from the comparison of what is hypothesized to happen with what is observed to happen. When the two fit, the scientist takes his hypothesis not to be usable. In sorting the usable and the unusable and meeting the challenge to complete ever more inclusive fittings, the scientist is impelled to create new conceptualizations (and new ways of testing) which will be more universally satisfying in comprehending ever more inclusive events. Like the painter, the composer, and the novelist, who also act toward their world as if they knew and could do the fitting thing, and who, in trying, submit themselves to being taught by the degree of fit between the tried and the observed-to-be, the scientist becomes a consciously creative creature.

The act of research is, therefore, to be recognized as an act intrinsically creative in its elemental form and function. Structurally and functionally it is comparable to the act of perception from which it derives:

In structure, both research and perception operate transactionally between inside and out, structuring from inner events, projecting into the environment, guiding action in search for fitting forms in the environmental setting, receiving and fitting these forms against the originating structure, modifying needs, etc., in a continuing transaction. In function, both are to create fresh semantic forms, new knowings fitted to the world and man; both are to serve man (1) in extending his transactions with the environment, (2) in ordering those transactions harmoniously with the knowing of the person, (3) in controlling those transactions in their increasing engagement with the environment, and (4) in accomplishing the larger holistic fit necessitated by the expanding fittings.

The difference between perception and research lies in the level of the actor's conscious involvement; in perception, the level is comparatively low, the perceiver entering the process at the point where, and in the degree to which, he can control the concept being used while the percept entering the process to consciously realize or control as much as he can of the assumptions he makes, the [illegible] he uses, the hypotheses he projects, the predictions he makes, the actions he undertakes, etc., through the full process.

Research is to do for man, as a consciously creative creature, what perception does for man as a created creature of nature; the latter is root to the former and both are the consequence of man as an open, integral, transactional and creative being in a universe of similar nature. Both are forms following the structure and function of creative phenomena in nature.

Taken as a naturalistically rooted system, research has a basis for disciplined development. As in nature, life forms get their test in their capacity to continue to enhance creation, also does research get its test in its capacity to continue and enhance creation. It is disciplined accordingly. As a creative form, it is to be applied to creative events. As a creative means, it is to be applied to creative ends. As a creative method, it is to be applied to creative content. As a life form, research is to serve the forming of life, reflexively open, integral, transactional and creative.

As "research" is to serve creation, so is "educational administration." "Educational administration" comes about as a society, pursuing its ceremonies of education, establishes an institution to allow some of its people to give their primary attention to the educational function. This institution, having its role in society, then needs persons within it who have roles allowing them to give their primary attention to the operations of the institution. The role of such persons is named "administration." Hence, "educational administration," the first word of which refers to the role of the institution in society and the second of which refers to the role of a person in the institution.

Recognizing education to be man's effort to consciously cultivate his creative capacity as a generalized problem-solving creature, and educational institutions to be functionaries of education, it is clear that those who function in the role of educational administration are to serve creative ends. This means to sponsor operations of the institution which form it as an open, integral transactional and creative system:

(1) An educational institution needs to be open to society to receive what is relevant to the institution's functioning (students, teachers, money, etc.) and to give to society what is relevant to society's functioning (persons able to be productive in homes, jobs, civic life, etc.). (2) It needs to be integral in its operations in order to effectively transform its input from society into the output society is to get. (3) It needs to be transactional in its operations in order to maintain, through time and change, the relevance and vitality of its give and take with society, and it needs to be transactional, as well, in its internal operations as sub-systems give and take with one another in their integral work of transforming input to output. (4) It needs to be creative in its operations in order to fit what it does to the native operations of its personnel as basically creative creatures, and in order, also, to achieve its elemental purpose which is to teach people how to nurture their own evolving creative capacity.

To view an educational institution as an open, integral, transactional and creative system, an administrator needs a mind which is disciplined to act likewise or what he decides to do will not fit to what he needs to do. This is a discipline which is shown in marked degree in persons whose roles in society more obviously call for a repeated and continuing creative production, e.g., inventors, novelists, painters, composers, frontier scientists and mathematicians. To quote from a study of such men:[1]

> The important thing is howthe creative person handles himself in relation to (a) the extension of his experiencing, (b) the focusing of his experiencing, (c) the management of his actions during his experiencing, and (d) the derivation of significance from his experiencing.
>
> The creative person seeks to extend his experiencing through holding himself open for increasing inclusions. This is evidenced by an inclination to take life as an adventure and a becoming, a curiosity and willingness to understand what is going on in oneself and in related aspects of the environment, a desire to get out to the edges of conscious realization and to feel a way into the unknown, an interest in new ideas and fresh perspectives, a spirit of play and experimentation.
>
> The creative person seeks to focus his experiencing through self-differentiation and self-realization. This is evidenced by a willingness to be different in things that make a difference, an honoring of his own fulfillment even when it runs counter to common expectations of others, a persistent inquiry into the meaning of his own life, a feeling that his individual life has independent roots, an insistence on expression for self-clarification, a feeling that the world is, in important part, his own creation.

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[1] Ross L. Mooney, "Groundwork for Creative Research," The American Psychologist, Vol. 9, No. 9, September, 1954, pp. 545-546.

The creative person seeks to manage his actions during his experiencing through disciplining himself to serve the extension and focusing of his experience. This is evidenced by an insistence on mastering his materials and tools of work so well that these become a part of his own way of living, an insistence on the privilege of controlling his own work schedule, a willingness to stick with baffling problems over an extended period of time, a capacity to be consumed by his work, a seriousness in selecting work to do which is personally and deeply valuable to him.

The creative person seeks to derive significance from his experiencing through dependence upon esthetic formings. This is evidenced by an insistence on harmony of form and function, a trusting of feeling to guide his way through an experience, a searching for the simplest structural forms to catch up a whole field of relations at once, an ability to think in terms of patterns of form, a sensing of a profound order in nature, and a searching for that order in himself and in the universe, a testing of a solution by the way in which it seems to fall into place without forcing, a deliberate nourishing of aid from unconscious sources, a sensitive awareness of positive and declarative modes of thought.

Administrators need a discipline of this kind no less than do persons who have historically been recognized as necessarily creative if they are to be successful. Their job is no less a continuing challenge to creation. Their medium, the operations of administration, is no less a medium for them than the operations of painting are the medium for the man who paints, the operations of composing are the medium for the man who composes music. Their need to be masters of their medium is no less; their need to be men who are bigger than the roles they take is no less.

As with creators in other fields, so with men in the role of administration, a crucial element is how the man handles himself. The central control is the man behind the role he takes, for it is he who opens, closes and directs his consciousness, thereby determining what of him can be given into the role and how it is to operate. It is he who has charge of what he consciously feeds into his generalized problem-solving process. The need for cultivating a conscious discipline of consciousness is therefore great.

To gain such discipline, there is the ceremony of science by which to carefully cultivate ways of conceiving the operations of administration so that these operations may more readily lend themselves to effective use as instruments of creation. Hence the effort to conceive educational administration in scientific ways. Hence, also, the interest in research since research is the ceremony by which the science of educational administration may itself be born.

This is where "research" and "educational administration" are joined in a common function. Men undertake research in educational administration in order to create a science of educational administration in order to get conceptual control of operations of educational administration in order to discipline their minds to make institutional operations their medium of creation by which to support the educational institution in being creative as it serves to help people become effective cultivators of their own creative capacities. The system is reciprocating and progressive creation ., one creative ceremony in behalf of another in a successive series of creative systems.

As noted, the characteristics of a creative system are that it be "open, integral, transactional, and creative." The training of persons to do research in educational administration is, therefore, aimed at teaching persons how to teach themselves to operate as open, integral, transactional and creative systems as they order operations in an educational institution which are to be open, integral, transactional, and creative in behalf of teachers who are to be open, integral, transactional, and creative in teaching others to be open, integral, transactional and creative and creative in teaching themselves as open, integral, transactional and creative creatures. The set-up, biologically, psychologically, and logically, is one creative system within another, each reflexively affecting the other, and all unified in the one enterprise of continuing responsible creation.

Herein lies the discipline of research in educational administration and of programs of training to fit persons for such activity.

II - Implications for Training

To list a few:

1. Trainees need to recognize themselves as created creatures of nature, having elementary functions and modes of operation which are the consequence of man's evolved condition as a natural organism. They need a good look at how they are made.

2. Trainees need to recognize themselves as consciously creative creatures, having both the responsibility and capacity to cultivate themselves as creative beings. They need a good look at what they are making of themselves.

3. Trainees need to be able to see research as a ceremony in cultivation of conscious creation, akin to other ceremonies which are also in cultivation of conscious creation-religious, artistic, educational, scientific.

4. Trainees need to be able to see research as creative of science, noting how science comes into being and the behaviors of those who are notably productive in creating science.

5. Trainees need to be able to see science as a form of education, a ceremony by which man makes nature his teacher , evolving concepts by which to guide himself into operations more fully harmonized with the possibilities of nature as a creative system.

6. Trainees need to be able to see education as a ceremony by which man takes responsibility for cultivating his consciousness in ways which fulfill his elementary nature as an open, integral, transactional, and creative system so what he does consciously is in harmony with what the universe otherwise invites and allows. They need to understand such activity as an effort to provide for the human mind conditions for cultivation which are the same as those for the evolution of the species, the birth of a generation, the existence of an organism, the operation of the universe.

7. Trainees need to be able to extrapolate a generalized process of creation and to identify the process as it occurs in a variety of contexts in nature and man.

8. Trainees need to be able, also, to identify the creative process as it occurs in man's making of his institutions. They need the long range perspective, the operational and functional view of how institutions are formed and die.

9. Trainees need to be able to conceive educational institutions as creative systems, and educational administration as the operation of a creative system. They need to know the varied operations going into the action of an educational institution and to be able to evaluate those operations in relation to the potential creativity of the resources entering the institution, the creativity of the product produced, the process of production, and the personnel producing it.

10. Trainees need to be able to focus research according to the role taken by the user, e.g.:

> The role taken by the administrator requires knowledge focused in terms of the operations of institutions since the administrator acts by means of institutional operations and seeks, as his product, an improvement in institutional operations. He acts from within the process he is investigating.
>
> The role taken by the professional researcher requires knowledge focused in terms of the operation of formal conceptual systems (e.g., sociology) since the professional researcher acts by means of conceptual operations and seeks, as his product, an improvement in conceptual operations. When he takes educational administration to be the object of his study, he takes himself to act from outside that field and to observe that field against the background of his conceptual system.
>
> The role taken by the professor of educational administration requires knowledge focused in terms of the operations of persons since the professor of educational administration acts by means of his effect on persons (students) and seeks, as his product, an improvement in the capacity of persons to take roles in educational administration. While he acts from within an educational institution as professor, he operates from outside the institution in which his products are to operate, viewing his action against the background of his knowledge of persons in such situations.

11. Trainees need to be able to include in "the field of research in educational administration" as much diversity of focus as there are roles to be differentiated in operating or viewing the institution.

12. Trainees need to try to integrate this diversity in forms of research in the same way and for the same reasons that they need to try to integrate the diversity of operations making up the integral operation of the institution as a creative system.

13. Trainees need to be able to see research as a means to releasing creative growth in individuals, and to study the conditions under which research has and does not have this effect.

14. Trainees need to identify and understand their own individually unique capacities as creative producers; otherwise they fall short of their maximum creative capacity.

15. Trainees need to be put in charge of an important part of their own education, taking responsibility for a large share of their own creative development. They need the chance to confront themselves in developing their power to open their minds, to focus their experience, to discipline their actions, and to evaluate progressively forming events; otherwise they have no way to take themselves in hand as potential creators.

16. Trainees need the chance to learn from one another as each undergoes his efforts at self-clarification and self-discipline. Much can be gained from others in the same stage of struggle.

17. Trainees need to cultivate their capacity for the full creative act, the private half having to do with the derivation of a significant question or hypothesis for test as well as the public half having to do with answering the question or running the test. Typically, training deals with the second and public half, neglecting the first and private half.

18. Trainees need the help of a matured person acting in the role of tutor to support the individual trainee in the exploration and development of his unique capacities as a creative instrument, and in the work he does in the private half of his research act.

19. Trainees need to understand research as typically conceived and as implemented by established ceremony, technique, and technology. They need to be able to guage research critically, against creative criteria, and against both social and personal need.

20. Trainees need access to personal examples of matured researchers from whom they can learn by empathetic imitation and differentiation. Examples would be helpful in at least three roles: administrator, professional researcher, and professor of educational administration.

More points might be added.

The list may be sufficient, however, to give body to the proposition that training for research in educational administration would be affected if the prior proposition is accepted that research and educational administration are creative functions.

Concluding Comment

I would like to close with an observation on the current scene which explains, in part, why I think we would benefit by taking research and educational administration as creative functions, rooted in nature.

It seems to me that too many people in research and educational administration depend for their answers to the question of what is good in research and educational administration on what groups in their profession say is good. They do not have a grasp of these functions in their own direct right. They cannot themselves think out what is good, based on the intrinsic nature of the function. They have great trouble relating the function of research to the function of educational administration in ways which allow for their effective integration. As students, it is probable that they never had the chance to internalize either function as a creative act of a creative creature which was them. They were trained to look outside themselves for the answer to their questions and wound up outside the problem as well. Such training is tragedy.

As I see it, the time has come, on many grounds, for turning our thoughts seriously to nature as source for our understanding of ourselves. Nature is ordered; our minds can become better ordered to fit to nature. Fit alone to man, one mind to another, and the consequence can be confusion multiplied.

Much talk about creation is confused, but not nature! How else are we delivered from one moment to the next, one day to the next, and all in order? How else one generation following on another? How else the evolution of man himself, his mind, and his way of ordering? How else explain man to himself? How, otherwise, explain the presence of "research" and "educational administration" which now we want to understand?

What future, then, and what way to fuller life (or, indeed, to life at all) except it be with widening consciousness and deep intent to knit the formings of the mind with formings otherwise so that, as creation comes, creation enters more into the mind and life of man.

DIFFERENTIATED RESEARCH TRAINING FOR ADMINISTRATION STUDENTS

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In the recent surge of concern about improving the general quality of leadership in our schools, considerable attention has been focussed upon programs for training school administrators. One of the more persistent problems encountered in these programs is determining the nature and amount of training in research which is desirable. The problem has several aspects.

Whether by accident or design, training programs for school administrators have usually been established in the form of courses of study leading to graduate degrees. Thus, the programs have inherited the whole tradition of the graduate program as developed for advanced training in the sciences and humanities. Since the tradition includes a heavy, if not a primary, emphasis upon training research workers, this emphasis has been reflected, at least nominally, in programs in school administration. Its influence has been buttressed, furthermore, by the tendency for academic respectability to be conceded to new programs in proportion to their conformity to traditional academic practices.

The strong nominal research emphasis in early administration programs, however, has not remained unchallenged. An evaluation of Southern States programs in the period 1950-1955 reported:

> ...the investigating group found that although much information was needed in educational administration, graduate research tended to be poor and usually served no real purpose beyond meeting degree requirements. It was often defended as providing an "experience for the student". Another difficulty was that the research was rarely related to any program; results were bound and published but seldom used. This study proved that there was little institutional research which could be of value to the SSCPEA in solving important problems in educational administration; therefore, it raised questions concerning the value of the research to the student who was engaged in it.[1]

Similar opinions are commonly expressed in other areas of the United States and Canada where traditional research experiences are required of future administrators. The essential point is summarized by the CASA as one of their 35 guiding statements for training programs.

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[1] Southern States Cooperative Program in Educational Administration, Better Teaching in School Administration (Auburn, Alabama: Alabama Polytechnic Institute), 1955, p. 27.

> The school administrator is a practitioner, not a researcher, and the research required of him in professional training will recognize this distinction.[2]

In response to this point of view, professional degrees (M.Ed. and Ed.D.) have been instituted with modified research requirements. Their popularity is indicated by the report that in the period 1956-1958, 85.8% of the 621 doctorates granted in educational administration were Ed.D.'s as compared to 14.2% Ph.D.'s.[3] But far from resolving the issue the trend has induced its own reaction. After noting with concern the slow demise of the Ph.D., Griffiths comments:

> ...we have real reason to be concerned. At the very time we need more people skilled in research in this field, the supply is drying up. The fact is becoming obvious to the universities that are now (i.e. 1959) trying to employ professors with a research orientation and with the necessary skills.... It is the responsibility of the universities to reverse the trend and to start producing researchers. No one else can do this. The universities must take the lead and they should start immediately.[4]

The question of the place of research in the training program, then, goes beyond the restrictive influence of the academic tradition and involves concern for a functional program for practitioners, on the one hand, and concern for the extension of knowledge through increased numbers of research-oriented personnel, on the other. Clearly there is need for differentiation between programs on the basis of nature and amount of research training. As the CASA puts it in a further "guiding statement":

> Some--not by any means all--colleges will offer training for research specialists and instructors in educational administration as well as for practitioners.[5]

The purpose of this discussion is to explore appropriate differentiations for the research training of students in administration and to examine implications for the nature of the resulting different programs. Some implications for other aspects of the training program will also be indicated.

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[2] Committee for the Advancement of School Administration, Something to Steer By (Washington, D.C.: The Committee), 1958, Statement 17.

[3] Brown, L.D. and M. Slater, The Doctorate in Education, Volume I, The Graduates (Washington, D.C.: American Association of Colleges for Teacher Education, NEW), p.10.

[4] Griffiths, Daniel E., Research in Educational Administration (New York: Bureau of Publications, Teachers College, Columbia University), 1959, p. 12.

[5] Committee For the Advancement of Administration, op.cit. Statement 18.

AN APPROACH

A glance at the present positions of the recent graduates in administration is enough, in most institutions, to show the diversity which must be accommodated within the program. Although in most universities the largest single bloc may be entering superintendencies and principalships, surprisingly large numbers enter school systems in other capacities, become university instructors in school administration, executives of professional associations, directors or staff members in research agencies, executives in commercial firms related to education and so on. The range is so wide, in fact, that no program could provide specifically for each vocation. Indeed, attempts at specific vocational subdivisions have frequently resulted in excessive emphasis upon technical aspects of the job to the detriment of more general and more basic administrative skills.

It does appear necessary, however, to make functional distinctions--distinctions which recognize the need of the field of school administration, as a whole, to be both virulent in the generation of new knowledge and competent in its practice. These two essential functions may, in fact, be used to define a dimension for functional division of labor.

Campbell and others[6] have proposed such a dimension. To replace the older classification of theorist-practitioner, they suggest three basic roles: the social scientist, the developer, and the practitioner. Since administration is an applied rather than a basic discipline, the social scientist performs for it a role analogous to that of the physical scientist to the engineer; he generates knowledge. The developer, generally in the position of professor of administration, is sufficiently familiar with the various social sciences that he may select useful knowledge from a variety of sources and transmit it to the practicing administrator.

A slightly different division of roles on the same dimension may be derived from the classification of research activities used by the National Science Foundation: basic research, applied research, and development. These terms are described by Fattu as follows:

> Basic research includes original investigation for the advancement of scientific knowledge. The primary aim of the investigator is achievement of fuller knowledge or understanding of the subject matter under study, rather than making practical applications of new knowledge. Applied research is directed toward practical applications of scientific knowledge. Development is the systematic use of scientific knowledge for the production of useful materials, devices, systems, methods, or processes, exclusive of design and production engineering.[7]

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[6] Campbell, Roald F., Charters, W.W., Jr., and Gragg, William L.,"Improving Administrative Theory and Practice," in Campbell R.F. and Lipham, J.M. (eds.) Administrative Theory As A Guide to Action (Chicago: Midwest Administration Center, University of Chicago, 1960), pp. 171-189.

[7] Fattu, Nicholas A., "The Role of Research in Education--Present and Future," Review of Educational Research. XXX, No. 5 (December, 1960), p. 413.

Comparing this taxonomy with that of Campbell, the basic research category appears to be the equivalent of the social scientist; the applied research and the development categories appear to offer a useful division of Campbell's developer role--useful, at any rate, when one is focussing on distinctions in research functions. Finally, the reference to design and production engineering as distinct developmental research suggests an interesting parallel to important parts of the function of the practicing administrator.

Adapting from both sources we have a sequence of four roles and functions that purport at least roughly, to encompass the field of administration: the social scientist, who produces general knowledge; the applied scientist, who produces generalized applications of knowledge; the consultant, who develops applied knowledge into usable form; and the practitioner, who implements knowledge in a particular context.

An example may serve to clarify the different roles. One or more social scientists, let us say, have done some basic work on the theory of leadership. The applied scientist probably a professor of administration, is familiar with this work and proceeds to construct an instrument for the measurement of leadership in school situations. The consultant, possibly also a professor of administration, works this device, along with others into a realistic scheme for selecting administrators and communicates his scheme to superintendents in the field. They, in turn, may make the decision to try the scheme for the selection of principals and so proceed with the multiple decisions for implementing it in their particular situations.

The roles are overlapping, of course, but each provides about the necessary degree of specialization to match the complexity of the task. It is noted that in the Summary Table, the practitioner is characterized as being a producer of "decision research". This will be briefly elaborated.

Throughout the literature on administration, decision making is regarded as an important if not the central function of the practitioner. Notable for the development of this emphasis have been Simon[8] and Griffiths[9]. As one considers the decision process, it is hard to avoid its striking similarity to the standard research process. It is essentially the scientific method adapted to a different setting. It involves careful definition of the problem, identification and analysis of the important elements, collection of data pertinent to these elements analysis and interpretation of the data, and finally, formulation of a conclusion. It differs from the research process only in that it is usually less formal, it usually involves a crucial time factor which forces compromises in various phases of the process, and it frequently is more deeply involved in values. In this latter respect, decision-making differs only in degree from research and as Simon[10] points out, the value

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[9] Griffiths, Daniel E., "Administration As Decision-Making", in Halpin, A.W. (ed.), Administrative Theory in Education (Chicago: Midwest Administration Center, University of Chicago), 1958, Chapter 6.

[10] Simon, op. cit. Chapter III.

SUMMARY TABLE

I. Research Activity	Social Scientist	Applied Scientist	Consultant	Practitioner
Function	Producing general knowledge	Producing generalized applied knowledge	Developing applied knowledge into usable form	Implementing knowledge in particular context
Research Production	Basic research	Applied research	Developmental research	Decision research
Deductive Consumption		Basic research	Applied research	Developmental research
Inductive Consumption	Applied research	Developmental research	Decision research	
II. Training Program				
Training In Social Sciences	Advanced specialization in one	Partial specialization in one or more	General background and selected knowledge	Selected knowledge
Training in Skills of Administration	Little or none	Intensive in conceptual skills	Intensive in conceptual skills, less intensive in human and technical skills.	Intensive in conceptual, human, and technical skills
Training in Statistics	Advanced technical	Advanced technical	Intermediate technical, advanced interpretive	Elementary technical, intermediate interpretive
Training in Research Methods	Theoretical-experimental	Theoretical-experimental	Empirical-experimental Survey	Research procedures applied to decision-making, survey
Internship	Apprenticeship to social scientist	Apprenticeship to applied scientist	Apprenticeship to consultant	Apprenticeship to practitioner
Thesis Requirement	Basic research	Applied research	Developmental research	Decision research

elements must be isolated from the factual elements and be treated as variables. It is useful, then, to consider the practitioner as a producer of "decision research" for two reasons. The term emphasizes the continuity of function from social scientist through to practitioner, and, perhaps more important, this approach to decision-making suggests implications for appropriate research training for practitioners.

Before considering the implications of this four-role approach for the training of administrators it should be noted that the simple producer-consumer view of research in administration must be modified. All four roles involve the production of research if we extend the meaning of the term to include developmental and decision research. As consumers of research, those in each role, except the social scientist, consume deductively the type of research which precedes their own type in the sequence. So the applied scientist transforms the product of the social scientist into something more particular and so on. But each of the roles, except the practitioner, is also an inductive consumer--each uses the problems and products of the role following in sequence for the generation of ideas and hypotheses and, in some cases, for the use of data. It is clear, therefore, that each role must be oriented to its neighboring roles--to both neighbors where applicable.

IMPLICATIONS FOR TRAINING

The Social Scientist

The only concern here about the training for this role is its relationship to the training for others. Consequently, entries in the Summary Table under this heading are intended only to describe, roughly, present practices.

The Applied Scientist

At present there are few, if any, programs designed to train applied scientists for the function visualized here. The shortage of such people is, in fact, one of the major stumbling blocks in the development of the field of administration. The training program suggested involves more specialization in the social sciences and in research than is typical of the most research-oriented programs. It includes partial specialization in one or more social sciences (at least the equivalent of the master's level); intensive development of the conceptual skills in administration (though no necessary concentration on the human and technical skills[11]); advanced statistics for creative, technical use; research methods emphasizing theoretical-experimental approaches; apprenticeship to an applied scientist for practical experience; and a thesis as a contribution in applied research.

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[11] Classification developed by Katz, Robert L., "Skills of An Effective Administrator," Harvard Business Review, Vol. 33 (January-February 1955), pp. 33-42.

Those who presently occupy this role, though the numbers are inadequate, tend to be either social scientists who have become interested in the applied field or professors of administration who have unusual research interests. To be effective as applied scientists, both must overcome the deficiencies of their training--the former must acquire a background in education and in administration and the latter must become conversant with the social sciences and highly competent in the technicalities of research. These self-educating procedures are no longer adequate for a role that has become so crucial.

The Consultant

Like the applied scientist, the consultant frequently occupies a position as professor of administration but is oriented more to the practitioner than to the social scientist. His training should reflect this emphasis. He requires a general background in several social sciences together with a detailed familiarity with knowledge selected from the social sciences as having application to administrative problems. His developmental work further demands intensive training in the conceptual skills of administration with some attention given to human and technical skills--somewhat less than for the practitioner. In statistics, the consultant requires an intermediate level of knowledge for technical use but a thorough understanding of advanced statistics for the interpretation of basic and applied research. His developmental research calls for training in empirical-experimental and survey methods and for practical experience in this type of research as an apprentice to a consultant. His dissertation would appropriately be of the usual formal sort which would contribute rather directly to the improvement of practice.

The present supply of personnel for the consultant role is apparently insufficient to meet the demand--though perhaps not so much so as for the applied scientist role. The existence of some training programs for the consultant role has been of considerable assistance in meeting the demand but as the growth continues in the number and size of graduate programs in school administration the demand for staff can be expected to be heavy. It seems apparent, therefore, that training for the consultant role should be expanded.

The Practitioner

The broad outlines of training programs for practitioners have obtained quite wide acceptance. In the terms used here, the program usually includes intensive development of the conceptual, human, and technical skills of administration, including useful knowledge selected from the social sciences. It usually includes, also, a period of internship or apprenticeship in a school situation.

The research aspect of the program, however, has been much more controversial. The point is often made, with some force, that the traditional graduate research training and especially the thesis requirement are not highly contributive to the practitioner role. The analysis here tends to support this view. It sees the practitioner as having a double concern with research. His first concern is an accomplished consumer of research—particularly of the developmental sort. To perform this function his training should include an understanding of statistics sufficient to interpret and appraise the research. This may be described as intermediate interpretive statistics to indicate a somewhat lower level than is required by the consultant.

The practitioner's second concern with research, if the term is used broadly, is in relation to his vital function as a decision-maker. As was noted previously, the research process so closely resembles the decision-making process that the knowledge and skills that have been developed for conducting research may be readily modified to apply directly to decision making. This is certainly true of the conceptual skills involved in decision-making: defining the problem, analyzing the problem to identify its significant elements, recognizing the relationship of the problem to the whole context. It is also true of the technical skills: surveying the literature for relevant knowledge; collecting, analyzing and interpreting data. In a real sense the practitioner is director of research in his school or school system, supervising the collection and analysis of the masses of data that are needed for making decisions--data about pupil achievement, building accommodation, teacher personnel, and all other aspects of the operation. The usefulness of the research process does not extend, of course, to the human skills of decision-making: obtaining participation where appropriate, using group processes, developing acceptance, supervising implementation, and so on. These skills, however, are usually treated extensively in administration courses and are practiced in the internship.

In his training, then, the practitioner should develop a full understanding of the scientific method and its application to the conceptual aspect of decision-making. Further, he should be trained as a technician in the appropriate kinds of research methods, especially the survey method, and in the use of at least elementary statistics.

His thesis would appropriately take the form of decision research. That is, it would be a formalized presentation of the total conceptual and technical processes of making a particular decision in a particular school or school system. Although in form it would be somewhat similar to the traditional thesis or dissertation, its significance in the experience of the student would be greatly increased. It would provide for him a model of inclusiveness and rigor to follow in a career of decision-making. Certainly the conduct of decision research would be every bit as challenging to the student and as demanding of the student as the traditional research exercise. Although the products would be restricted in direct application to the particular scene of the decision, they would undoubtedly make general contributions of the sort made by case studies. They could also be expected to contribute to the continual refinement of conceptual and technical procedures for decision-making.

SUMMARY

Differentiation in the research training of students in school administration is seen to be more appropriate on the basis of research functions performed by different basic roles than on the basis of particular positions. The roles considered were the social scientist who produces general knowledge, the applied scientist who produces generalized applied knowledge, the consultant who develops applied knowledge into a usable form, and the practitioner who implements knowledge in a particular context.

The major conclusions drawn from the analysis are, first, that the applied scientist role is so important to the advance of school administration that special training programs should be developed for it. Such a program would place heavier emphasis upon training in social sciences and in research than do present programs. Second, although some appropriate training programs for the consultant role do exist, they need to be expanded. Third, the research training of the practitioner must fit him as a competent consumer of research but, perhaps more vitally, may be adapted to make an important contribution to his central decision-making skills. It is around "decision research" that the practitioner's research training should be built.